World leader in
active security

# INSTALLATION MANUAL

# *BANDIT* 240PB

**UK 230 VAC**

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# INTRODUCTION

By selecting this device, you have acquired advanced active access-prevention technology. With ***BANDIT*** we offer you an affordable system which guarantees operational reliability, top performance and a discrete design.

More and more private and public buildings are being equipped with a protection system against burglary. When armed, these systems detect a burglary attempt. The detection is generally communicated by means of a siren and/or strobe or sometimes an automatic phone call to an alarm control centre or police station. In real terms these notifications are satisfying, but the subsequent human intervention often arrives more than 10 minutes after the event! Burglars are aware of this and use this time to steal the most valuable things and get away in time.

***BANDIT*** offers a unique and active solution to this problem. For this system is totally capable of filling a large office, store or other room, within a few seconds, with a non transparent fog. This fog prevents persons from entering the room for at least 10 minutes after setting off the alarm, since they cannot see a thing. The ejected fog has a soft mint smell (to avoid possible fire interpretation by outsiders), it is colourless and leaves no traces. So the fog safely and quickly disables the vision capabilities of unwanted visitors.

***BANDIT*** is installed in those rooms that contain the most valuable objects; by doing so, burglary damage is effectively limited to a strict minimum.

## Advantages:

- Fills 1000 Ft³ (28 m³) of space per second of fog expulsion.
- Extremely compact and discrete design.
- A system free of maintenance with very high operational reliability (by lack of moving components).
- The standard integrated “Power saver” and good thermal isolation, maintains a very low energy consumption, between 30 and 40 W/h, depending on the adjusted fog expulsion period.
- Continuous control of liquid level. When the level is too low to guarantee a full expulsion period it will be shown by an LED and an electrical contact will occur. In this case you’ll have to replace the internal *HY-3* pack. The recognition and acceptance of the new *HY-3 pack* (such as the resetting of the *HY-3* shortage notification), occur automatically. For recharging, the empty *HY-3 pack* has to be returned to your ***BANDIT*** dealer.
- In case of interrupted power supply voltage (230 VAC), operation is guaranteed: electronics ~24 hours, fog generator ~2 hours.
- The device is prepared through plug-in connectors, to be extended with a control box and/or a wireless remote control.
- A powerful and flexible alarm central connection. With this the unit can be programmed by means of a PC/laptop (Win95/98/2000/XP). This kind of programming facility offers a comfortable and practically unlimited programming possibility.
- Includes a ‘real time clock’ and extended log for 1000 events, whereby every event is documented with time and description of it. This electronic log is equipped with an internal battery (10 years), in order to save all data in the event of a total power failure occurs.

- The internal failure check system constantly controls the perfect operation of:
    - the internal power fuses and heat fuses
    - the power voltage of the 13,2 volt battery
    - the communication with the *HY-3* pack
    - the status of the inputs and outputs
    - the temperature of the heat exchanger, the *HY-3* pack, and the PCB environment.
    - the presence of power supply voltage.
    - the internal tamper circuit (anti-sabotage circuit).
- By means of a connecting cable (communication link) between a IBM compatible PC or laptop, you will be able to read out the unit (settings, log and/or internal values). The required CD with the Bandit Software can be requested for free at your local ***BANDIT*** dealer, or can be downloaded from our web site www.bandit.be. This program runs with Win95, 98, 2000 as well as with XP and offers a friendly Windows like users program.

It is advised to perform a yearly fog generator test. See also Maintenance, page 43.

## Standards:

- Complies with European CE and EMC Standards.
- Complies with International Standard: IEC 839-1-3
- Approved by the Belgian Ministry of Internal Affairs
- Complies with the British Standard: BS 7939 : 1999
- Complies with the Dutch Standard of the NCP: IOE 03301-M and IQA 06901-M
- Complies with the French Standard of the CNPP: test report n°AI 040006
  approval n° 2004-0001
- Complies with the Danish Standard of the F&P: class 1, AIA 212
  registration n° 10.212-00418

## Industrial property:

- ***BANDIT*** is a registered trade mark.
- ***HY-3*** is a registered trade mark.
- The ***BANDIT*** fog generator process is internationally protected by several patents.

## Producer:

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# SAFETY PRECAUTIONS

## Location:

- To prevent fire or shock hazard, do not expose this appliance to rain or moisture.
- Install the device in such a way to allow a good airflow.
- Only install the appliance as described, i.e. In vertical position, with the text on the front panel being readable from the floor. The maximum angle of inclination is 15° to the front and 10° in all other directions.
- System malfunction is possible at ambient temperatures above 50°C. Keep the appliance away from heat sources such as radiators, heating elements, stoves or other heat producing devices.
- The appliance is unexpectedly heavy, ~62 Lbs (28 Kg). It needs to be fixed on a sufficiently solid surface. Use sufficiently strong fixing materials, preferably our 240 floor or wall mounting, which are very solid and reliable supports for your unit.

## Electrical connection:

- This appliance only operates on 230 VAC / 50 - 60Hz (210-240 VAC) supply voltage with grounding. Always check the voltage on the rear cover of the device.
- This device has a max. Peak consumption of 3.5 A / 230 VAC. Use only power cable and grounding of minimum 1.5 mm² (preferably flexible with end splices). Use the strain relief which is ~0.5 In. beneath the entrance of the power supply input.
- If you detect a strange smell or smoke, the appliance has to be switched off immediately by turning the main supply fuse to “off”.
- In case of doubt, immediately contact your ***BANDIT*** dealer or manufacturer, mentioned on the back cover of this manual.
- There are no repairable components inside the appliance. Leave all repairs to authorised persons and/or the manufacturer.
- The PCB contains a heat sink. On all parts and areas beneath and around this cooling plate, there are uninsulated “dangerous voltage” points. This “dangerous voltage” can cause electrical shocks.
- For further connection instructions, see page 8.

## Cleaning:

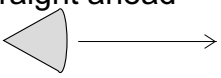
- Do not use volatile fluids, such as alcohol, thinner, petrol or spirit to clean the outside of the appliance. Use a clean, damp cloth.
- The black front textile has to be cleaned with a vacuum cleaner with soft brush mouth (dust signs). The frequency of cleaning depends on the quantity of dust present in the room to be secured.

## Fog ejection control:

- The ejection nozzle is normally about 5°C warmer than the temperature of the environment, so not warm enough to get burned by. However during fog ejection and the first two minutes after, this nozzle can reach a temperature up to 120°C . Avoid direct contact with the nozzle after a fog ejection to prevent skin burns.
- A fog ejection test only should be performed when:
  a) All persons in the surrounding area and fire safety personnel have been notified, and
  b) There is nobody in the immediate surroundings and/or direction of ejection.
- During a fog ejection test, it is prohibited to look towards the direction of the ejection nozzle from a distance less than 25 Ft (8 metres).

# SPECIFICATIONS

## Descriptions:

- Dimensions: 10.6 In. wide x 14.4 In. high x 10 In. deep.
- Weight: 62 Lbs (28 Kg).
- Max. Mains supply failure: Fog generator +2 hours and electronics +24 hours.
- Reaction time: 1 second between alarm signal and fog ejection.
- Fog ejection image: Cone shaped straight ahead (optional), or
  60° wide coon  (R60 standard version)

## Fog generator:

- Fog ejection capacity: 1000 Ft³ filling of space / second with 1 Ft. eye ↔ object.
- Fog ejection pressure: 230 PSI (1.6 Mpa).
- Maximum fog ejection period: 18 seconds.
- Warm-up time: 50 minutes from cold condition.
- Max./min. Environmental temp.: maximum 50°C / 120°F and minimum 0°C / 30°F.
- Maximum heat loss: 40 W/hour.
- Heat exchange capacity: 18 kW/hour.
- Nominal ejected droplet size: section 0,000016 In. / 0.004 mm (full aerosol).

## *HY-3* pack:

- HY-3 fluid contents: 1.4 litre (0.37 gal.).
- Nominal working pressure: 230 PSI (1.6 Mpa).
- Maximum allowed internal pressure: 870 PSI (6 Mpa).
- Construction material: rvs 304L and aluminum AlMgS1.
- Build-in electronics: digital temperature sensor and analog/digital E²prom memory level.
  - tamper switch and control LED.
  - integrated propellant-expulsion security
  - direct working 12 V NC valve.

## Electrical:

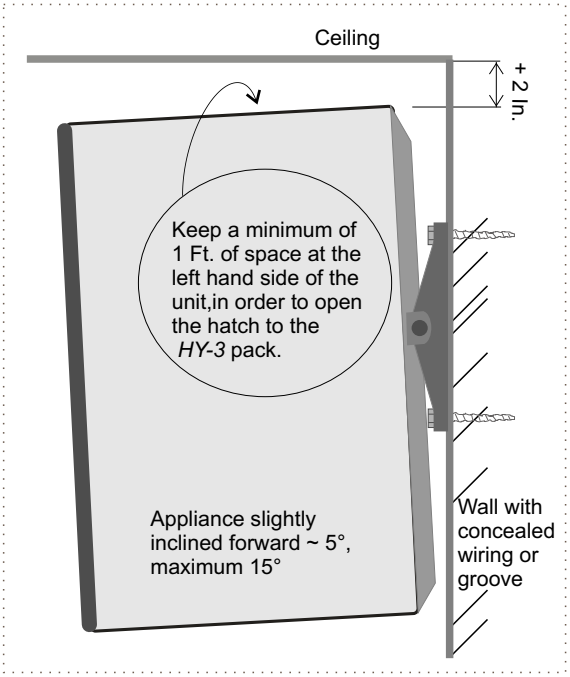
- Min./max mains power supply: 210 to 240 VAC at 50 to 60 Hz.
- Nominal 12 V low voltage: 13.1 V DC from 0 tot max. 500mA load.
- Max peak current at 230 VAC: 3.5 Amps.
- Average power consumption: 40 W/hour.
- Capacity heating element: 750 W.
- Inputs: all inputs are insulated by an opto-coupler.
- Outputs: all outputs are potential free relais contacts
- Current back-up: 12 V / 2 Ah (sealed lead acid battery).
- Power control: Pulse width modulator (PWM) through zero-cross triac.
- Electronics: Flash micro-controller, Platina Pt1000 sensor converter, time/date clock with back-up battery and 64K E²prom.
  - On board communication with HY-3 pack
  - On board communication: 6-way connector for connection to "Control Box" and 5-way plug for wireless remote control.
  - Serial communication with communication link

The unit is packed in a cardboard box:
15.35 x 15.35 x 1.57 In. which contains:
- ***BANDIT*** 240 PB device.
- double sided warning sticker “Burglary...”
- this installation manual.
- "HY-3 grip" tool

# MOUNTING

As a professional, you'll have to consider properly, what would be the most effective place to install the appliance. Here are some guidelines which can help you with your decision:

- ☑ Logically, you'll place the appliance so that the fog expulsion points in the direction of the supposed burglary entrance or in the area which contains the most valuable objects. Should this entrance provide a potential big air passage to outside (i.e. a garage door, a glass frontage which is sensitive for break-in, etc.), You’ll have to prevent the ejection nozzle being pointed in this direction to avoid the potential fog ejection to be blown outside. In this case, you’ll have to point the nozzle towards a side wall to break the ejection pressure. This way, the fog will “cloud out” and only a little amount of fog will be blown directly to the outside.
- ☑ Avoid the ejected fog forming a oneway trap. The ejected fog is supposed to form a strong take-away reducing barrier. Burglars are not supposed to be caught. Further, if there is a false alarm, the chance to catch innocent persons, is bigger than to catch burglars in a real burglary!
- ☑ Determine the place in such a way that the ejection nozzle does not point in the direction of fragile objects. The powerful fog expulsion could blow down these objects.
- ☑ There has to be a free passage area for the ejected fog, of at least 20 Ft. before it bounces against a fog blocking obstacle, i.e. a front wall. The space of about 20 Ft. in front of the ejection nozzle will be the first to be filled out with fog, and this within 2 seconds.
- ☑ If there are already PIR-sensors installed in the room to be guarded and you don’t want to take any risks with false triggering because of fog expulsion, you’ll have to replace these PIR’s with combo-sensors (PIR/radar). If you have to install a new installation, use combi-sensors for volumetric detection in ereas where ***BANDIT*** is installed. Radar never detects floating clouds, most PIR’s do sporadically.
- ☑ Make sure that no burglar can come near the unit without being detected first by a sensor. This sensor has to start a fog expulsion, independently of an eventual entrance delay.


Ceiling
+ 2 In.
Keep a minimum of 1 Ft. of space at the left hand side of the unit,in order to open the hatch to the HY-3 pack.
Appliance slightly inclined forward ~ 5°, maximum 15°
Wall with concealed wiring or groove

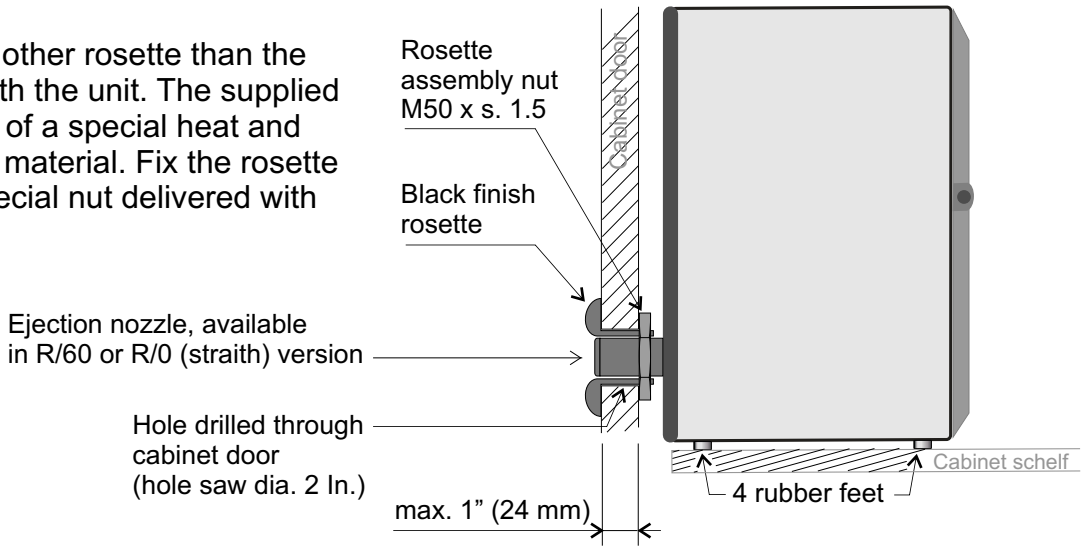
☑ Make sure the ***BANDIT*** is firmly secured to wall or floor, to prevent a burglar with prior knowledge from throwing the unit quickly through a window.
Use an optional available ***BANDIT*** wallmounting to install the unit against a wall:
There are two kinds of wallmounting: flat or swivel. Use the re-usable mounting help "Handy boy" to install the unit, as this tool carries the unit and makes it possible that any person can install the device easily by himself.
- For wallmounting against a solid brick wall, use plugs and screws supplied within
- For wallmounting against a double plaster wall, use special metal plaster-plugs available in any hardware store.
- For wallmounting against a single layer plaster wall: install the unit only in an inner corner and order in addition an optional plaster inner corner support plate. Don't install the unit with a normal wallmounting against these kind of walls to avoid the device falling on the floor after a while, due to its weight.

☑ For floor mounting, use ***BANDIT*** floor mounting. This floor mounting is screwed into the floor or stuck to it with included double-sided adhesive tape. The device is installed at 2 In. (50 mm) off the floor to avoid possible damage due to cleaning tools or water.

**Hidden mounting of the appliance**

☑ For installation into a closet, order the device with option /L. This unit is supplied with 4 rubber supports (feet), a 2 In. extended ejection nozzle (a standard closet door has a thickness of approximately 3/4 In). and a heat resistant black door rosette (ejection nozzle passage). This way you can hide the device and at the outside only the rosette will be visible. Make sure you provide a ventilation grid above and beneath to avoid too much rising of the temperature in the closet due to ***BANDIT*** 's heat loss. With an ambient temperature above 50°C / 120°F, the unit will activate its technical output [Okout] and you can expect damage on the internal lead battery.

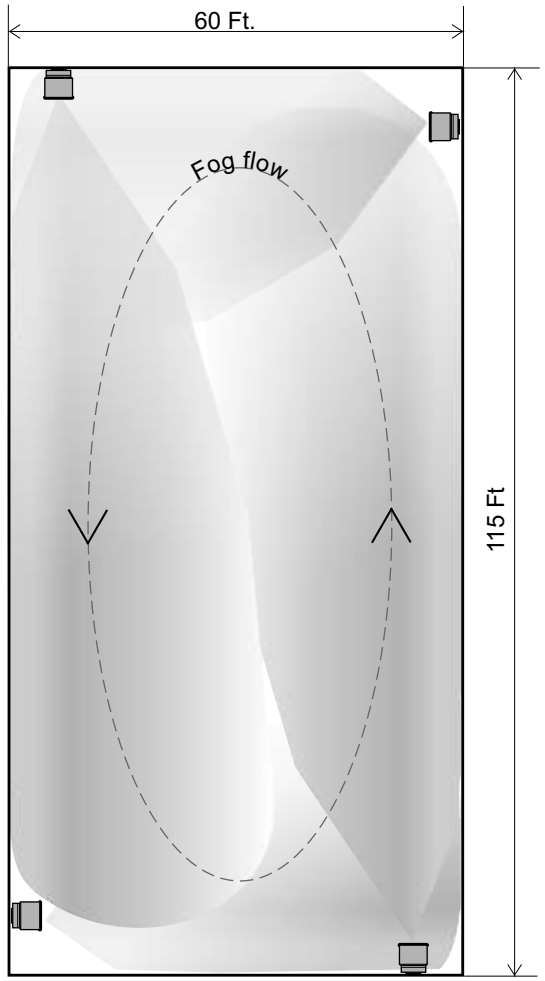
☞ Do not use any other rosette than the one supplied with the unit. The supplied rosette is made of a special heat and steam resistant material. Fix the rosette by using the special nut delivered with it.


Rosette assembly nut M50 x s. 1.5
Cabinet door
Black finish rosette
Ejection nozzle, available in R/60 or R/0 (straith) version
Hole drilled through cabinet door (hole saw dia. 2 In.)
max. 1" (24 mm)
Cabinet schelf
4 rubber feet

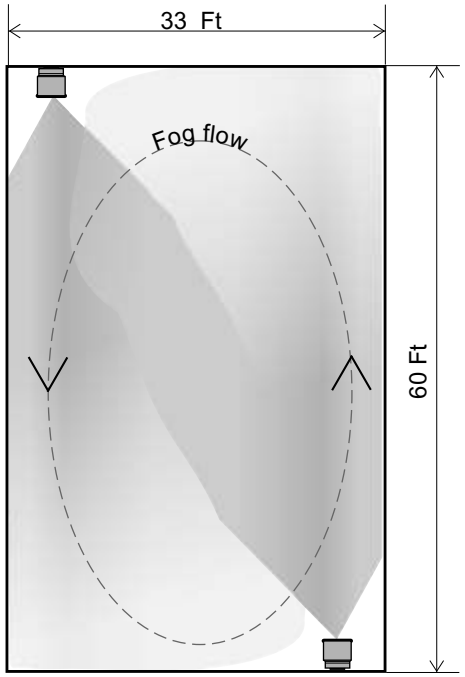
**Mounting aid**: handy boy.
This optional tool is used to install the device against a wall. It is attached with two pins to the wall mounting and so it makes a solid shelf.
On this temporary shelf, ***BANDIT*** is wired and adjusted. After installation, the two pins are pulled out, releasing the handy boy, so it can be used again in the next installation. You'll save yourself a lot of trouble to keep the device at a working height while connection works are being performed.

**Mounting more than one *BANDIT* 240 devices in one large room.**

Example of mounting in a shop of 6980 Ft². Fog image after 8 sec. of fog expulsion.




Example of mounting in a shop of 1980 Ft². Fog image after 8 sec. of fog expulsion.




The ***BANDIT*** 240 has a room filling capacity of ~1000 Ft³ per second. This corresponds with ~100 Ft²/sec. The max. surface area which can be secured with one device is equal to the max. fog expulsion period = 18 s x 100 Ft²/s which is 1800 Ft². For larger surfaces, such as: large shops and office spaces, one has to install more devices, one device each 1500 Ft² with a normal ceiling height of 9 Ft. Install the units in such a way that the fog stream of one device points next to, but not in the direction of the next unit. This way, there is a round stream of fog throughout the entire place. This guarantees the fastest filling of the room.

While mounting, keep in mind to provide a free passage for the fog stream. After a while, the store keeper has forgotten about the units and stacks boxes and displays right in front of the fog ejector of the devices.

# ELECTRICAL CONNECTION

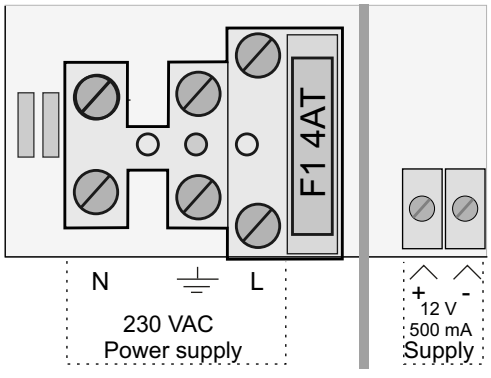
The ***BANDIT*** 240PB is equipped with simple and yet versatile interface. This version is only programmable through PC or laptop using the communication link.
This unit is intended to be connected to an existing alarm system or be installed as a stand-alone unit.
The build-in electronic system takes care of controlling and securing:
- the fog generator (3 x temperature + frequency control of valve).
- tamper switch of the rear cover, *HY-3* pack hatch and optional connected "Control Box".
- control of front- and PCB LED, and internal siren.
- read out of inputs and jumper adjustments.
- control of tamper-, technical- and programmable outputs.
- control of internal battery, glass fuses and internal fan.
- digital and analogue communication with the *HY-3* pack.
- serial communication with PC/laptop (com port)

The complete electrical system is accessible by removing the rear cover of ***BANDIT*** (unscrewing 4 x M4 cross head screw). The rear cover is tamper secured, so be sure that the unit is not in guard mode and that the control room (optional) is warned.

**Connection on the main power supply:** on the left, beneath the PCB, you'll find a 3 way terminal block with integrated main fuse. The PCB is marked with "230 VAC supply". Connect the left connector strip (N) to the mains neutral (blue or white wire), the middle one to the green-yellow ground wire and the right connector (L) to the mains phase (black wire). Switching phase and neutral has no effect to the function of ***BANDIT*** .
The unit is secured for mains failures and can be practically seen as an Ohmic power load.

Connect the power cable through the strain relief connector (~0.5 In. beneath the left entrance in the metal back frame).

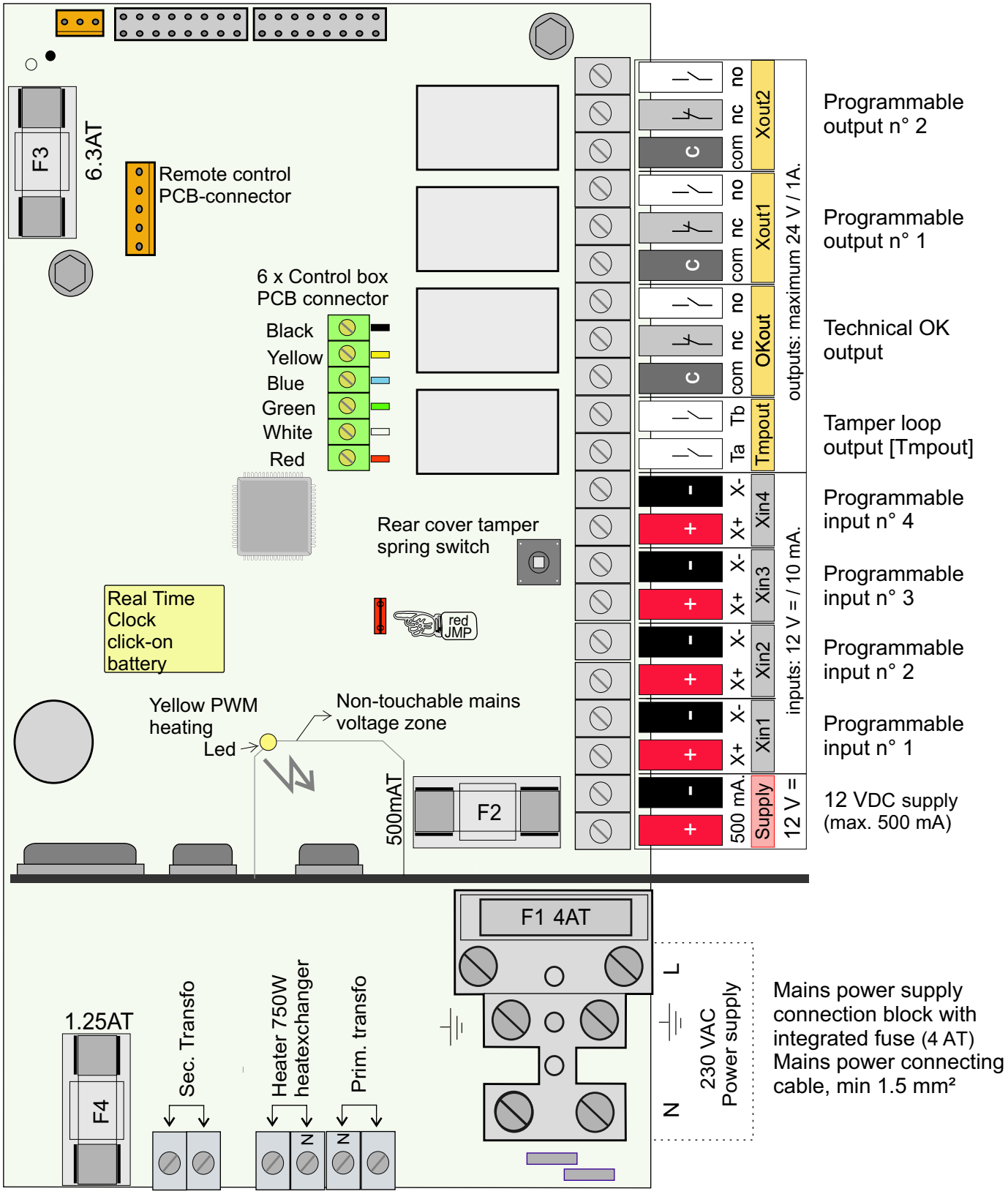
Power supply glass fuse (5 x 20 mm)
F1 = 4 AT slow




- Preferably use a separate fuse, directly coming from the main power supply or connect to existing power circuit of installed controlling alarm system (***BANDIT*** has a peak current consumption of 3.5 Amps. for each unit).
- For easy installing, use flexible connection wires 3 x 1.5 mm² with end splices.

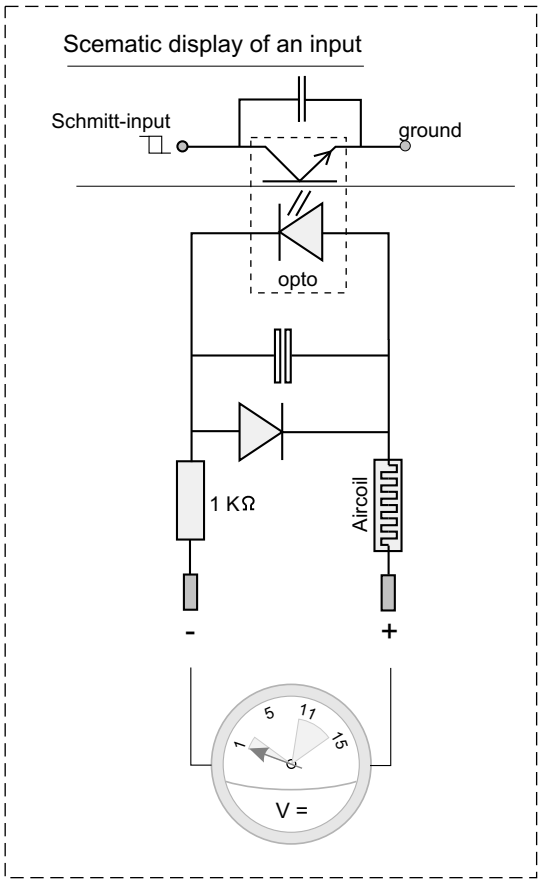
- For complete PCB (printed circuit board) layout with description of connector strips, see page 9.
- For properties of the in and outputs, see page 10 through 31.
- For detailed description of LED functions, see page 32 through 34.

# PCB layout


F3
6.3AT
Remote control
PCB-connector
6 x Control box
PCB connector
Black
Yellow
Blue
Green
White
Red
Rear cover tamper
spring switch
red
JMP
Real Time
Clock
click-on
battery
Yellow PWM
heating
Led
Non-touchable mains
voltage zone
500mAT
F2
F1 4AT
1.25AT
F4
Sec. Transfo
Heater 750W
heatexchanger
Prim. transfo
N
N
L
230 VAC
Power supply
no
nc
com
Xout2
no
nc
com
Xout1
no
nc
com
OKout
Tb
Ta
Tmpout
outputs: maximum 24 V / 1A.
X-
X+
Xin4
X-
X+
Xin3
X-
X+
Xin2
X-
X+
Xin1
inputs: 12 V = / 10 mA.
500 mA.
Supply
12 V =
Programmable
output n° 2
Programmable
output n° 1
Technical OK
output
Tamper loop
output [Tmpout]
Programmable
input n° 4
Programmable
input n° 3
Programmable
input n° 2
Programmable
input n° 1
12 VDC supply
(max. 500 mA)
Mains power supply
connection block with
integrated fuse (4 AT)
Mains power connecting
cable, min 1.5 mm²

# Inputs

All inputs are equipped with opto-couplers, which provide care of a perfect separation between the internal ***BANDIT*** electronics and the “outside world”. This way, all unwanted disturbing signals, caused by lightning, induction or R.F. tensions, are kept outside.



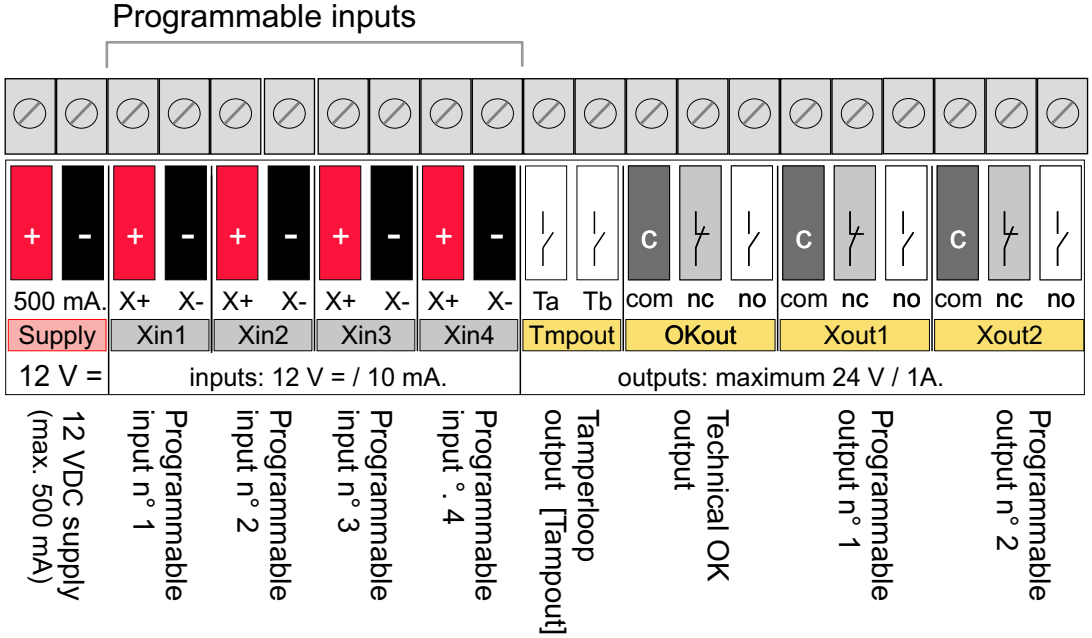

**Electrical properties of an input:**

- polarised (+ and - signs beneath connectors on PCB.
- secured for possible polarity reverse and equipped with RC- and LC- filter.
- an input has to be stable for at least 0.2 seconds before the new situation is accepted.
- the connected voltage can be either from an external source or from the 12 V ***BANDIT*** supply source itself [Supply].
- the input current with 12 V is ~ 10 mA each input.
- each input is equipped with a Schmitt-input, after the opto-coupler. The trigger voltage is approximately 6 V with hysteresis of + and - 1V. This way, unreliable input voltages are being avoided as much as possible.

After adjustments: check the voltage over the inputs.
- Consider < 2 V as no volts.
- Consider > 9 V as 12 V .

Voltages between 2 and 9 V are not normal and will cause problems sooner or later.

The device, model 240PB , is equipped with 4 inputs. The function is determined by selecting the desired function trough PC/laptop.


Programmable inputs
+ - + - + - + - + - Ta Tb c nc no c nc no c nc no
500 mA. X+ X- X+ X- X+ X- X+ X- Ta Tb com nc no com nc no com nc no
Supply Xin1 Xin2 Xin3 Xin4 Tmpout OKout Xout1 Xout2
12 V = inputs: 12 V = / 10 mA. outputs: maximum 24 V / 1A.
12 VDC supply (max. 500 mA)
Programmable input n° 1
Programmable input n° 2
Programmable input n° 3
Programmable input °. 4
Tamperloop output [Tampout]
Technical OK output
Programmable output n° 1
Programmable output n° 2

## Possible software settings for the inputs.

On each of the four physical inputs [Xin1] to [Xin4], there can be assigned a function. To simplify the human interpretation concerning the inputs while reading them out, each input can be appointed with an alias (nickname) (e.g. [Xin2] = “PIR sensor entry”).

Following, you’ll find an overview of the possible settings, offered by the BS-software. In the help-function of this BS-software, you’ll find more and detailed information for each function.

### ☑ No function:

The input is totally ignored by the software.

☞ Make a habit to assign a ‘no function’ to not connected inputs (floating). This way you’ll make sure, this input is really ignored all the time.

### ☑ Guard:

This function reports to ***BANDIT*** that the selected input has been assigned as guard input [Grdin]
The guard input arms/disarms the unit . Only if ***BANDIT*** is in "guard mode" is it possible to switch to “alarm mode” by activation of the alarm input(s).

**Properties of the "guard mode":**

- The red LED "Guard" on the front panel will be on as long as the unit is in “guard” mode.
- Eventual LED-warnings on the front panel such as: failure, HY-3 and power? Will be off under any circumstances. The green OK-LED on the front panel remains on. This way, a unit which is switched in "guard mode", will never show to the outside world that it might have a technical problem.
- The functional properties of a guard input are also determined by clicking on ☑ the optional settings, e.g. an alarm input (see next page). This way, a unit can refuse to switch on to guard mode, because of an active alarm input at the moment of switching into guard mode.

**Activating the guard input [Grdin]:**
This input can be activated by means of 12 VDC or no voltage over the input, as well as by means of a pulse on/off activation through a negative ⎍ or a positive ⎍ edge.

☞ If an optional remote control is connected, **and** channel 1 and/or 2 of this remote control is set as guard input, the guard function cannot be set onto inputs [Xin1] to [Xin4].

☞ To avoid activation conflicts, only 1 input can be appointed with the guard function.

## ☑ Alarm:

This function reports to ***BANDIT*** that the selected input has been assigned as alarm input [Alin]
Only if ***BANDIT*** is in "guard mode" is it possible to switch into “alarm mode” by activating the alarm input(s) (starts actual fog ejection).

**Properties of the "alarm mode":**

- The red LED "Alarm" on the front panel will be on the moment the "alarm mode" starts and off as soon as the unit is switched to guard mode **off** (see page 11 "guard mode").
- The moment the "alarm mode" starts, there will be a fog expulsion (selected fog ejection period). A running fog expulsion can only be interrupted by switching the unit to guard mode off through the guard input. After a fog expulsion, there will be added 3 minutes as ‘dead period’ or auto-reset period. A new alarm pulse (edge) on an alarm input after these 3 minutes, will start a new fog ejection period. See also page 19, under temperature protection.
- With the alarm mode, also the integrated siren starts to sound. The volume as well as the period of sounding can be set: - speaker - alarm siren

**Activating the alarm input [Alin]:**
Depending on the software settings, the alarm input can activate the alarm mode through a negative or a positive edge.

☞ If the optional remote control is connected, channel 1 and/or 2 can be set as additional alarm input(s).

☞ Using the software additional options can be assigned to the alarm input.
Possible options for an alarm input:

- ☑ The use of an input delay.
  If an input delay is set, the clicking on (check mark in the box) of this option will determine if this input delay is valid for this alarm input.
- ☑ The use of an output delay.
  If an output delay is set, the clicking on of this option will determine if this output delay is valid for this alarm input.
- ☑ Confirmation required.
  If an input is set as confirmation input, the clicking on of this option will determine whether this confirmation input has to be activated as a condition to proceed as a valid alarm when there is an incoming alarm signal over this alarm input.
- ☑ Can switch into guard mode while an alarm input is activated.
  Clicking on of this option determines whether the unit can switch to guard mode while this alarm input is activated.
- ☑ There can be also set an additional fog ejection period on each different input. A magnet switch sensor on a garage door can require a longer fog ejection period than a sensor on a relatively smaller back door.

## Doorbell:

This function reports to ***BANDIT*** that the selected input is determined as a doorbell input. As long as ***BANDIT*** is switched into "guard mode", this input has to be seen as a normal alarm input.
However, as long as ***BANDIT*** is not switched into "guard mode", the activation of this unit will only result in a sound generated by the unit (doorbell).

**Properties of the "doorbell mode":**

- While the unit is switched into guard mode:
  The input behaves itself as a normal alarm input, with the same functionality and the same optional settings.
- While the unit is not switched into guard mode:
  The activation of this input starts a doorbell sound. The volume as well as the period of this audio signal can be set - internal speaker - doorbell.
  When an output is determined with the function of 'doorbell output', this output will be active as long the doorbell audio signal is heard.

**Activation of the door bell input:**

- While the unit is switched into guard mode:
  Depending on the software setting, this input can activate the alarm mode with a negative or a positive edge.
- While the unit is not switched into guard mode:
  Depending on the software setting, this input can activate the doorbell mode with a negative or a positive edge, as well as through a level activation (0 or 12 volt is active). The doorbell mode is activated as long as the input is activated.

☞ This input function can save you a complete doorbell system. The same sensor (conforming to normal security requirements) can be used as alarm sensor as well as complete doorbell system.

☞ The activation of the doorbell input while the unit is not switched into guard mode, will not be written in the log.

## ☑ Panic:

This function reports to ***BANDIT*** that the unit has to immediately perform a fog expulsion. The panic mode can be activated independently of guard mode, delay settings or confirmation requests. Normally, this input function is used to connect a panic switch to it.

**Properties of the "panic mode":**

- The red LED "Alarm" on the front panel will be blinking, as long as the unit is switched into panic mode.
- The moment the "panic mode" is activated, there will be immediately a fog expulsion (the fog ejection period can be set seperately). A running panic mode fog expulsion can only be interrupted by switching off the panic mode itself.
- When a fog expulsion is finished and/or interrupted and a new panic mode is activated, a new panic fog expulsion period will start. See also page 19, under temperature protection.
- If an output is determined as "panic output", this output will be active as long the panic mode is activated.
- The moment the panic mode is activated, the internal siren of the unit will sound. The volume as well as the sounding period of this panic siren can be set:
  - speaker - panic siren.

**Activation of the panic input:**
Depending on the software settings this input can start or interrupt the panic mode.

☞ Using the software additional options can be assigned to the panic input.
Possible options for a panic input:
☑ Can switch Panic ON.
An active edge (pulse) switches the panic mode on ( or ) .
☑ Can switch Panic OFF.
An active edge (pulse) switches the panic mode off.

- A panic switch whereby both options are clicked on for this input, has the possibility to either start (1st pulse) or stop (2nd pulse) a panic mode.
- A panic switch whereby only the option 'Can switch panic on' is clicked on for this input, can only start a panic mode.
- A panic switch whereby only the option 'Can switch panic off' is clicked on for this input, can only interrupt a running panic mode (e.g. key switch).

## ☑ Silent panic:

If this 'silent panic input' is activated, the unit only reacts by activating the output which is determined as 'silent panic output' during ☑ 3 or ☑ 60 seconds (mostly used for tele-reporting).

Of course this event will be saved in the log.

**Activation of a silent panic input:**
Depending on the software settings, this input can start the silent panic mode with a negative ⊓⊔ as well as with a positive ⊔⊓ edge.

## ☑ Warning:

This function reports to ***BANDIT*** that the selected input is determined with the function of warning input.
When this input is activated while ***BANDIT*** is in "guard mode" , the unit will sound it's internal siren and the event is saved in the log. Normally this input function is used to connect a sensor with it, pointed in an area where there is a major possibilty of accidental staff movement, such as the entrance hall of a public office. Instead of the member of staff causing a false alarm, he's going to be warned loudly that the alarm system is still in guard mode.

**Properties of the "warning mode":**
- If the function of an output is determined as 'warning output', this output will be active as long as the warning mode is activated.
- The moment the warning mode is activated, the unit will have it's internal siren hollowing. The volume of this temporary warning can be set. - speaker- warning siren.

**Activation of this warning input:**
Depending on the software setting, this input can start a warning mode with a negative ⊓⊔ or a positive ⊔⊓ edge or a setted active voltage level (0 or 12 VDC).

## Fire alarm on:

If applicable for the system, this type of input is connected to a thermal fire detector or with the output of a fire detection central. In case of a fire, not only will the fire detection system notice the fire, but also the burglary detection will probably switch into alarm mode, this because of the incorrect information received from e.g. the PIR-sensor detecting the moving heat from the fire or any people entering the premisis.
In case of a fire, most probably there will be also a fog expulsion. This type of input will prevent this awkward and unwanted situation.

### Thermal fire detector

Common used fire detectors can be stated in 3 major categories:
- Optical fire detector: is in fact a smoke detector. Smoke changes the light reflection properties of the air. This changement in light reflection will be noticed by an opto-electronic transmitter-receiver and reported as a smoke detection. Reacts on fog expulsion and causes fals smoke alarms.
- Ionic fire detector: is in fact also a smoke detector. Smoke contains chemical waste particles, which are produced as a result of burning. A slightly radio-active element notices this specific air pollution and this will be reported as a smoke detection. Reacts on fog expulsion and causes false smoke alarms
- Thermal fire detector: Reacts only on a relatively fast temperature change and an absolute maximum temperature at the ceiling. Doesn't react on fog expulsion.

**Properties of the 'fire alarm on mode':**
- The unit will in any circumstances refuse to perform a fog expulsion. Even an eventual panic input will be totally ignored.
- The moment the fire alarm mode is active, the unit will sound through its internal siren. The volume of this temporary warning can be set.- speaker - fire siren.
- If a fire alarm mode output is set, this output will be active as long as the fire mode is valid.
- If the "fire alarm on" input is selected with a voltage edge (pulse) operation, it is necessary to select also an input as "fire alarm off" to be able to switch off the fire alarm mode by p.e. key switch.
- The blocking of the fog expulsion will be only removed when the unit is subsequently switched into guard mode.

**Activation of the fire alarm on input:**
Depending on the software settings, this input can start the fire alarm mode when:
- A negative or a positive voltage edge (pulse): an active puls will switch on the fire mode. Following pulses have no influence. The software is going to force you to select also a "fire alarm off input". This input is described on next page (p17).
- An active voltage level (0 or 12 V): As long as the voltage is active, the fire mode will be active. The setting of a "fire alarm out" input is not required. However, if there were selected a 'fire alarm out' input, the status of this input would depend on the 'off status' of the fire alarm on mode. See next page (p 17)

☞ See also next page: fire alarm off input

## ☑ Fire alarm off:

If applicable for the installation, this input type will be connected to a fire alarm off switch (usually a standarised switchbox that can be opened by fire brigade or other authorised people to switch off the fire alarm) or to the output of a fire detection central.

**Properties of the “fire alarm off” input:**

- Has priority on the “fire alarm on” input. As long as the status of the “fire alarm off” input is active, the unit cannot be switched onto the fire alarm mode and an eventual active fire alarm mode will be interrupted.
- A “fire alarm off” input can only be selected when there is also a “fire alarm on” input selected.
- The switching off of the fire alarm mode does not mean that the fog expulsion blocking is switched off. The fog expulsion blocking will only be switched off, the next switching into “guard mode” through the guard input or by activating a programmed panic input.

**Activation of the fire alarm off input:**

Only 12 volt voltage level control is possible. This means that 12V over this input will reset the fire mode as a priority.

## ☑ Confirmation:

This input reports to ***BANDIT*** that there is a permission to proceed to the “alarm mode”. The meaning of this input function is as follows:
To postpone the transit to alarm mode, until a local zone detector confirms the burglary. For example: the alarm system is in alarm because of detection of burglary at the back door (confirmation input activated by means of the alarm system). ***BANDIT*** however, will only switch to it’s “alarm mode” if the burglar enters the zone “private-office” , because the PIR/radar detector on that location will transmit an active pulse to the alarm input on which it is connected.

**Properties of a confirmation input:**

- Only if an alarm input and a confirmation input are simultaneously active + 0.3 s, while the unit is in guard mode, ***BANDIT*** will switch to the alarm mode. Once in the alarm mode, the status of the alarm input and/or the confirmation input have no influence anymore on the sequence of the alarm cycle.

**Activation of the confirmation input:**
Only voltage level control is possible. Depending on the software settings, 0 V or 12 V can be set as active.

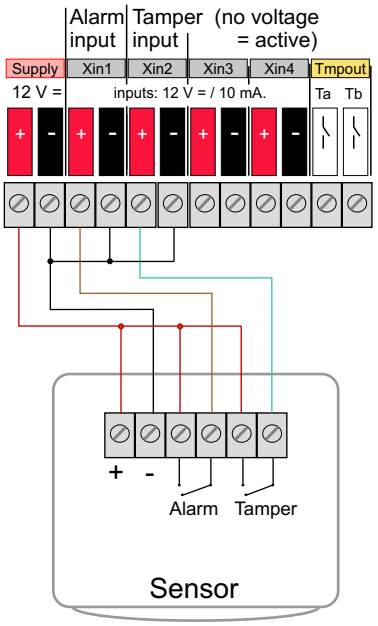
☞ Only one input can be determined with the function of confirmation input.

☞ If a confirmation input is activated while the unit is in guard mode, this event will be saved in the log (the moment of activation as well as the moment of desactivation).

☞ Each input which can start a fog expulsion (with exception of the panic input(s)), has a clicking on option: ☑ confirmation needed.
- If this option is not clicked on: the stated input can start the alarm mode.
- If this option is clicked on: the stated input will need a confirmation before the alarm signal will be treated as a valid alarm signal.

## ☑ Tamper input:

This function places the input, as if it were a seperated relay contact, in serial with the existing tamper-relay circuit [Tmpout].
In high-risk installations, the fixed defined output [Tmpout] is integrated in the tamper circuit of the existing alarm system.
If it is required that e.g. the ***BANDIT***-related confirmation sensor also has to be “tamper”-protected, an input can be determined as tamper input.
The connection of the sensor will be wirde in such a way that the input will not be active as long as the sensor tamper contact is closed.
If this input becomes active, this will result in the switching to ‘rest condition’ (COM and NO open) of the [Tmpout] contact.



**Properties of the tamper input:**

- As long as this input is active, the relay [Tmpout] will be switched onto rest situation (contact Ta and Tb open).

**Activation of the tamper input:**
Only voltage level control is possible. 0 V is factory (fixed) set as active (tamper problem).

☞ Only one input can be determined as tamper input.

## ☑ Internal siren:

The unit 240PB comes with an integrated internal siren. This siren is automaticaly activated with different modes (each mode has its own siren or beep sound). The “internal siren”-function gives you the possibility to control this siren also from “outside” through a selectable input.

**Properties of the "internal siren” input:**
Has the priority on all other siren sounds (with the exception of fire mode on).

- The volume of the internal siren can be set:
  - speaker - internal siren.
- The internal siren sounds as long as the internal siren input is active, but the internal Bandit-electronics will reduce the audio volume after 3 minutes of sounding, to 50% (battery saving).

**Activation of the internal siren input:**
Only voltage level control is possible. Depending on the software settings, no voltage (0 V) or 12 V can be set as active.

## ☑ External alarm:

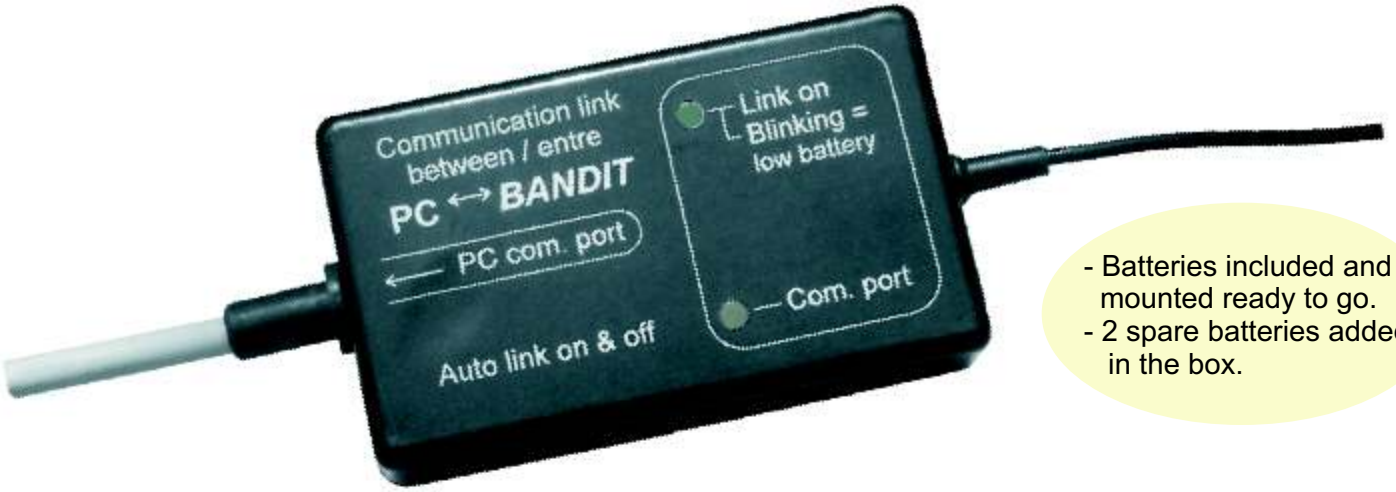
This special input function offers a fine solution for some special requests to the security installer. It’s obvious a ***BANDIT***-fog generator is installed in locations where “ram raid” sensitive, high value goods should be protected. Sometimes, there is also the need to overview and guard an external contact.
For example: a min/maximum temperature thermostat in a computer-server room, whereby the over or under temperature limit exceeding has to be logged, mains tension independent. As a warning, the siren has to sound and a contact has to report the technical alarm.
The input function “external alarm” could offer a very cheap and fine solution for such a problem.

**Properties of the external alarm input:**
As long as this input is active:
- The internal siren will sound.
- The time of activation as well as deactivation of this input will be logged.
- If an output is determined as “external alarm output”, the related relay will be active as long as the external alarm input will be active. See p. 30

**Activation of the external alarm input:**
Only voltage level control is possible. Depending on the software settings, 0 V or 12 V can be set as active.

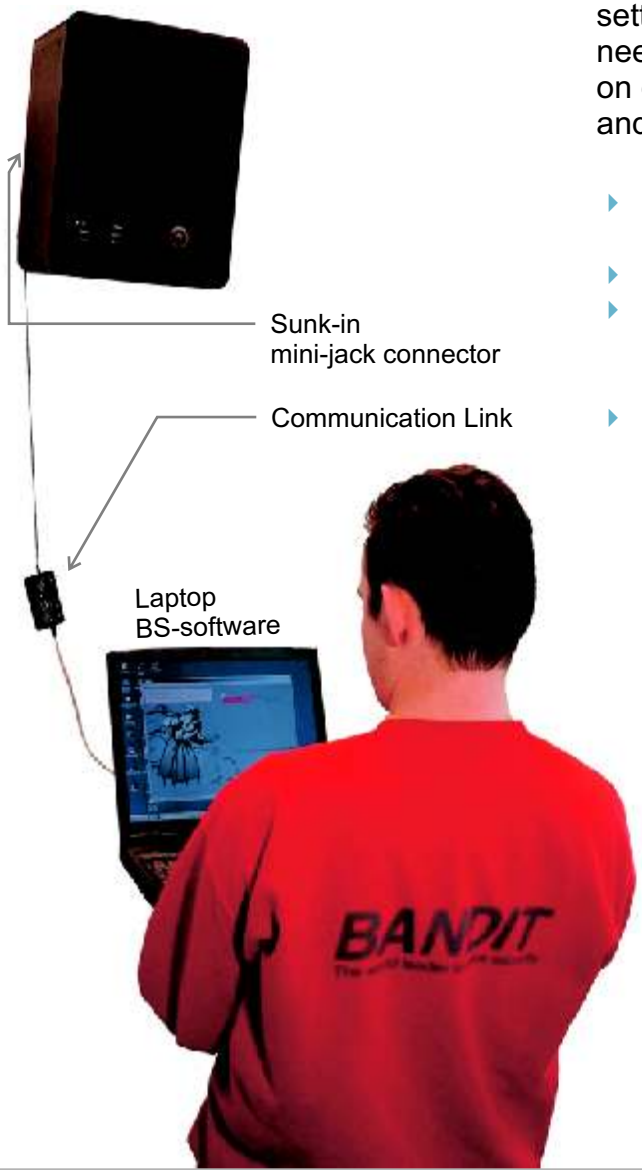
☞ Only one input can be determined as external alarm input.

On the back frame of the unit, you'll find a female mini-jack connector mounted and sunk-in. This extra protected, special input, has as feature to be the serial read-in and read-out communication channel to a PC/laptop.




- Batteries included and mounted ready to go.
- 2 spare batteries added in the box.

The PC-communication link is a tool every ***BANDIT***-installer has to use to have a data connection between ***BANDIT*** and a computer with a standard COM port (RS-232 SubD connector). To perform the software settings as well as to read-out the log of the 240PB, you'll need this "Communication link". It has to be plugged-in, on one side in the fog generator to be set and read-out, and at the other side into the computer.




- Fits to every PC/laptop (standard RS-232 /SubD9 connector).
- Is compatible with the "old" 220 ***BANDIT***-model.
- Safe, disturbance free and galvanic separation between fog generator and PC or laptop (+2.000 Volt secured opto-coupled data split).
- BS-software CD included in box or upgradeable through: www. bandit.be

**Frontpannel Communication Link.**

- Green Led: Link on/off
  This Led is on, the moment there is communication, until 10 seconds after the last communication signal.
- If this Led blinks, both batteries have to be replaced (Sony CR2430 or compatible).

- Yellow Led: RS-232 communication-Led.
  Blinks simultaneously with the communication signals coming from the PC/laptop. Blinks only when the chosen COM-port of the PC/laptop is right set.
  - BS-software - option - comport

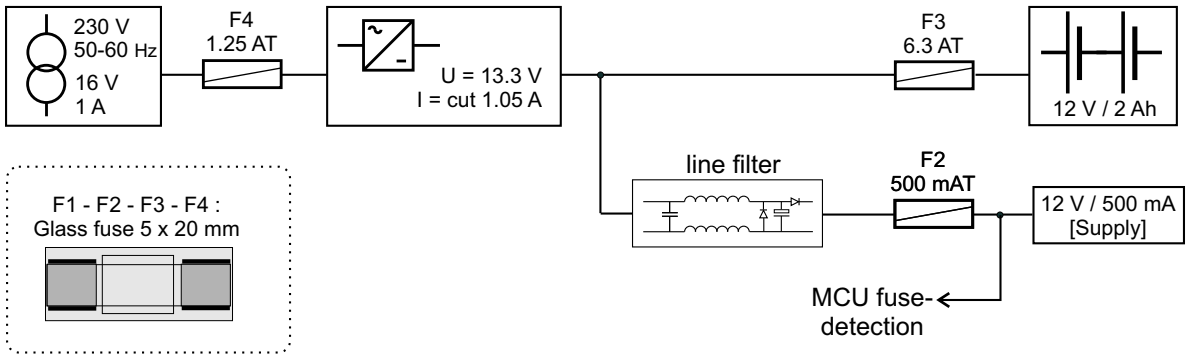
# Outputs

The unit has a total of 5 outputs:
1. The 12 volt supply output [Supply1] (fixed defined). See further this page.
2. The tamper loop output [Tmpout] (fixed defined). See page 23.
3. The technical failure report output [OKout] (fixed defined). See page 24.
4 - 5. These are programmable outputs [Xout1 and Xout2]. Like the inputs, the function of each of these outputs, depends on the set function selected through PC/laptop.

Following, you'll find a complete description of the properties of the different kind of outputs.

## Output: 12 VDC supply [Supply]:

Block scheme ***BANDIT*** low voltage circuit



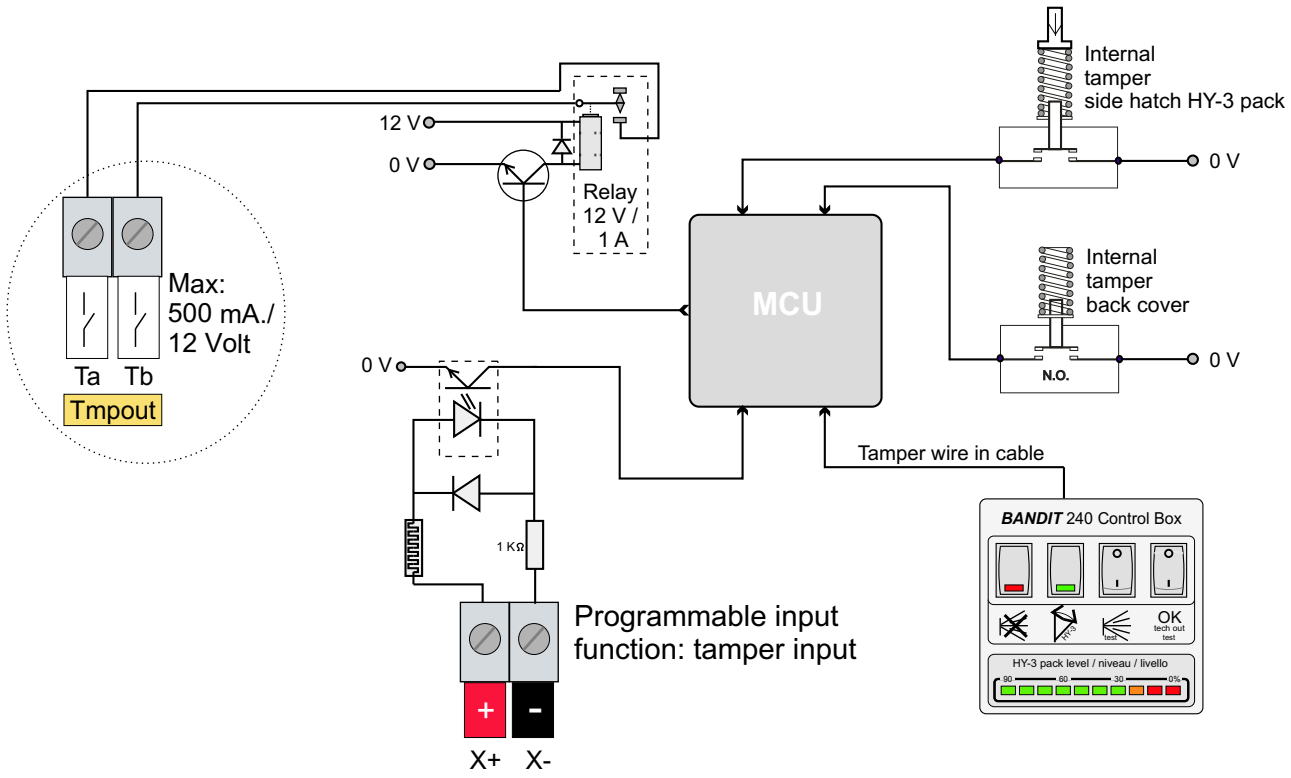

The [Supply] output can give a maximum of 500 mA (restricted by F2). In normal conditions and with a full charged battery under charging current, the voltage is ~13 volt. This voltage is practically ripple free (5mV ripple) and serves as supply for small external current consumers, such as extra interior siren, Jumbo-LED and PIR-sensors, and also as useful supply voltage for external relay contacts, to resend voltage signals to the unit's inputs.
The presence of this 12 V and good condition of F2 is continuously checked by the internal ***BANDIT***-electronics.
As a precaution make sure this [Supply] output isn't loaded continuously with more than ~450 mA.

☞ It is very important never to connect ***BANDIT***'s supply with the supply of a controlling alarm system or any other device which have their own supply.
Even the grounds may not be connected to each other. This could result into unexpected ground loops (high potential differences, especially with lightning and similar over voltages) with all bad consequences following.

## **Output: tamper loop** [Tmpout]:

The terminals of [Tmpout] are connected with the COM and NO contact of a relay.
As long as this relay is active, both contacts will be closed. The status of this relay is also determined through the MCU (Micro Controller Unit).

Block scheme ***BANDIT*** sabotage loop (tamper)




The MCU has as tamper related inputs:
- 2 permanent inputs: a) Internal tamper from the side hatch of the HY-3 pack, and
  b) the internal tamper spring on the back cover.
- 1 input from the tamper wire in the cable coming from an eventual connected Control-Box. This tamper cable will only be “seen” if a Control- Box is really connected and the “Control Box = present” is set.
- 1 input from a programmable input eventual set as tamper input. See p. 18.

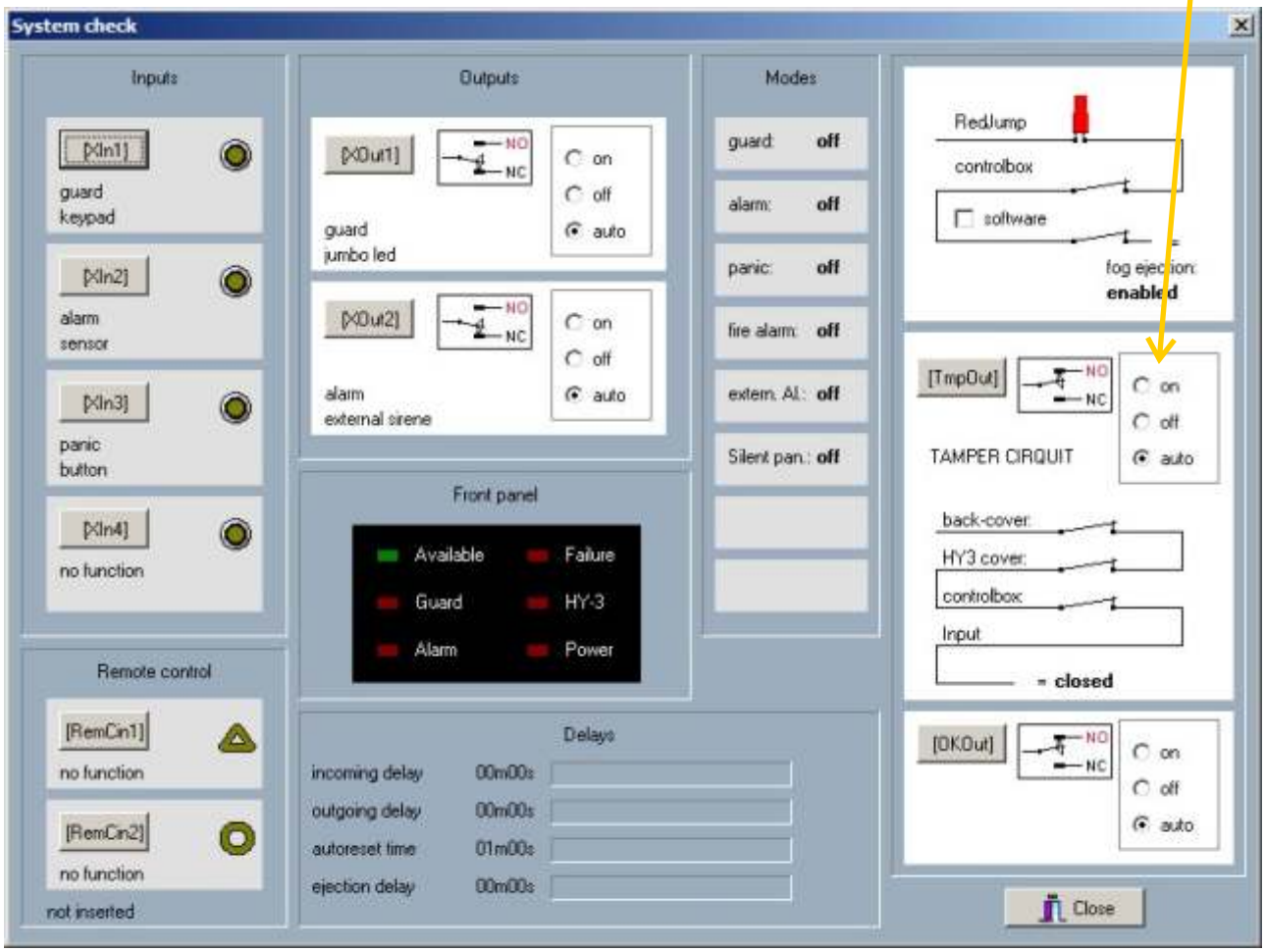
Based on the info of these different inputs, the MCU software will decide whether to activate or not to activate the [Tmpout]-relay.

**Properties of the tamper mode:**
- The [Tmpout] relay is in rest position (Ta and Tb open).
- The moment a tamper mode starts or ends is kept in the log, together with which tamper contact or tamper input has caused this tamper mode.
- Only if:
  a) Only if the click on option’ ☑ Tamper mode can start alarm mode’ is clicked on,
  (⌨ BS-software - ☜ Settings - ☜ Tamper mode), and;
  b) the tamper mode is being activated while the unit is in “guard mode”,
  the tamper mode will also be able to switch the unit into alarm mode.

**Application of the tamper circuit:**
In a traditional installation the tamper output [Tmpout] is taken into the main tamper loop of the existing alarm system (zone: tamper fog generator).

☞ The BS-software gives you the possibility to bridge the HY-3 pack side hatch tamper contact e.g. when opening this hatch to change the HY-3 pack without causing a tamper alarm - ⌨ BS-software - ☜ HY-3 pack - ☑ Software HY-3 pack side hatch switched off.

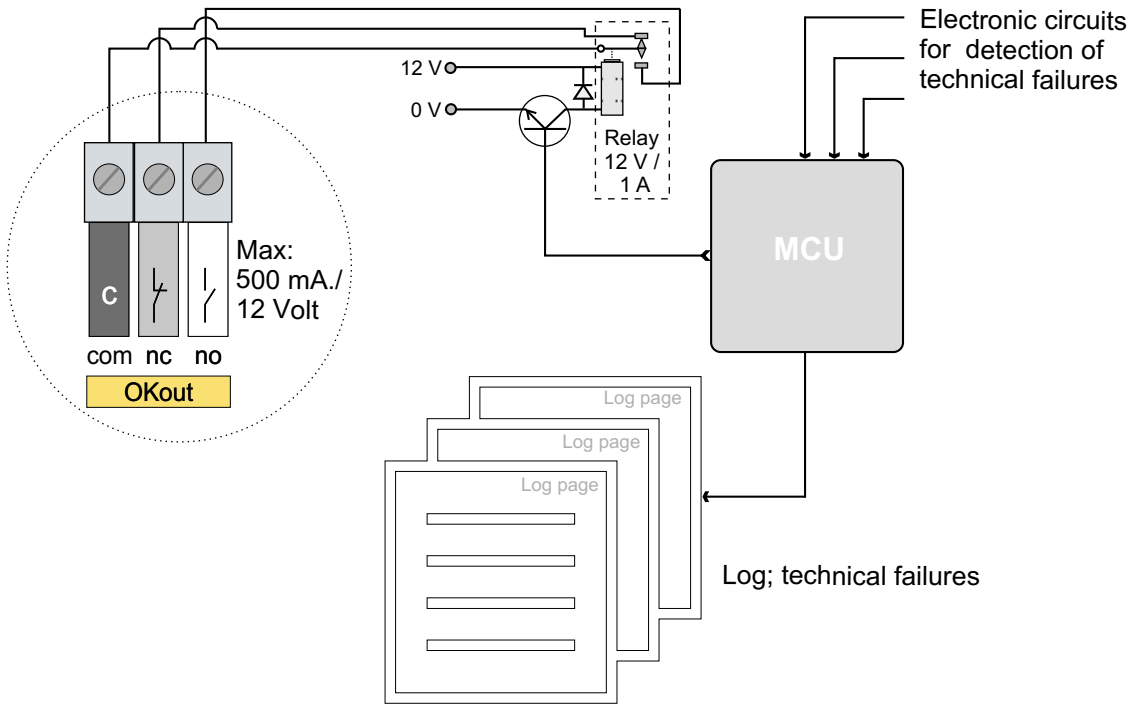
☞ The BS-software gives you a complete overview of the different tamper possibilities - ⌨ BS-software - ☜ Bandit - ☜ System check.
There is also a manual possibility to force the output [Tmpout] by mouse clicking on ⊙, off ⊙ or automatic ⊙.



## Output: Technical failure output [OKout]:

The 3 terminal connectors of the [OKout] are connected with the COM, NC and NO contact of a relay. The MCU determines, following the incoming signals from the failure detection electronics, the status of this relay.

Block scheme ***BANDIT*** **Technical output** (**OKout**)




As long as the internal ***BANDIT***-electronics don't detect an internal failure, this relay will be activated (COM and NC open).
As long as there is detected a failure, the [OKout] contact will be in rest (COM and NO open).

Following, you'll find an explanation of the different possible internal failures the ***BANDIT*** electronics are able to detect:

- The glass fuse F2 (500 mA from [Supply]) is interrupted.
- The glass fuse F3 (6.3 A battery fuse) is interrupted.
- There is no battery or the voltage of the battery is too low.
- The ambient temperature of the mounted HY-3 pack exceeds 120°F.
- The heat exchanger can not reach its goal temperature. This can mean:
  a) the internal over temperature fuse is interrupted
  b) the heating element from the heat exchanger is faulty
- The internal fan doesn't run properly.
- The unit is asking for more than 7 days to exchange its HY-3 pack. This item however is not a real failure, but an abnormal situation whereby the reliability of the unit is endangered because of to little amount of fog liquid in reserve. See also page 24, changing HY-3 pack.
- There is a lack of main power supply for more than 15 minutes (main power or main fuse F1).
- The MCU measures unrealistic values through its sensor inputs.
- Through a connected control box, an internal failure can be simulated OK tech out test.

An abnormal setting is valid for more than 3 hours. This setting is shown on the front led 'Failure' which will be blinking fast.

A few examples:
- Through the software forced outputs [Xout], [Okout] or [Tmpout]
- Eventual invalid settings
- Fog ejection blocked because of.
    - Red jumper not connected.
    - Through software in 'System control' screen ☑, see p. 24.
    - Through the "Control Box" switch
- Wrong or invalid HY-3 pack (e.g. : Demo HY-3 pack in a regular device).
- Tamper contact of the side hatch is bridged through the control box switch and/or through software ( ☑ HY-3 pack screen).

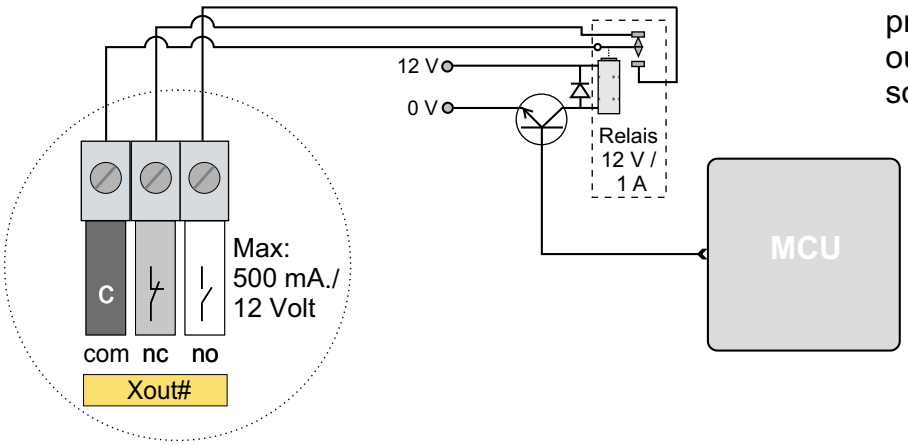
As soon as the internal failure is restored, the failure report will automatically disappear and the normal situation returns: [OKout] active (COM and NO closed).

A common application for this handy [OKout] output is to connect it to a programmable input of the controlling alarm system or auto dialer. This way it's very easy to report to a control room, by means of a phone dialer or an other communication system, the ***BANDIT*** might have an eventual problem.

## Outputs: programmable outputs [Xout1 and Xout2 ]:

These 2 outputs are potential free contacts. This way a perfect separation is obtained between the internal ***BANDIT*** electronics and the “outside world”.

Block scheme ***BANDIT*** programmable outputs




The function of each programmable output is determined trough software settings.

**Electrical properties of a programmable output:**
- potential free
- max load of 1 Amp. at max. 24 VDC.
- connect spark faders (varistors or free run diodes) over the contacts, if they have to switch inductive charges (relay-coils, bells, etc.).
- if the internal 12 V supply should disappear (<8 V.) All output contacts will switch to rest position (COM and NC closed).

### ☑ No function:

The output is always in rest position and is totally ignored by the software.

☞ Make a habit to assign a ‘no function’ to not connected outputs (floating). This way you’ll make sure, this input is really ignored all the time and always really in rest position (COM and NO open).

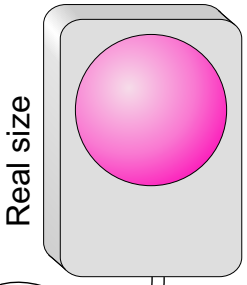
### ☑ Guard:

The output will be activated (COM and NO closed) as long as ***BANDIT*** is in guard mode. This way, ***BANDIT*** will show to the outside world, it is in “guard mode”.
A common application for this handy [Grdout] output is to connect it to an auto dialer (to report the guard mode condition), or to switch directly a Jumbo-Led(s) or even to wire connect the guard input of a following ***BANDIT*** (master-slave).

## **Jumbo-LED** option

Jumbo-LED is a little waterproof box as big as a box of matches with integrated 12 V LED of 3/4 In. diameter. Is used to warn bypassers an alarm system is in guard mode. Cheap, free of maintenance and as a preventive warning it is as efficient as a visible outer siren. For the owner, it is a clear sign that ***BANDIT*** is in guard mode.

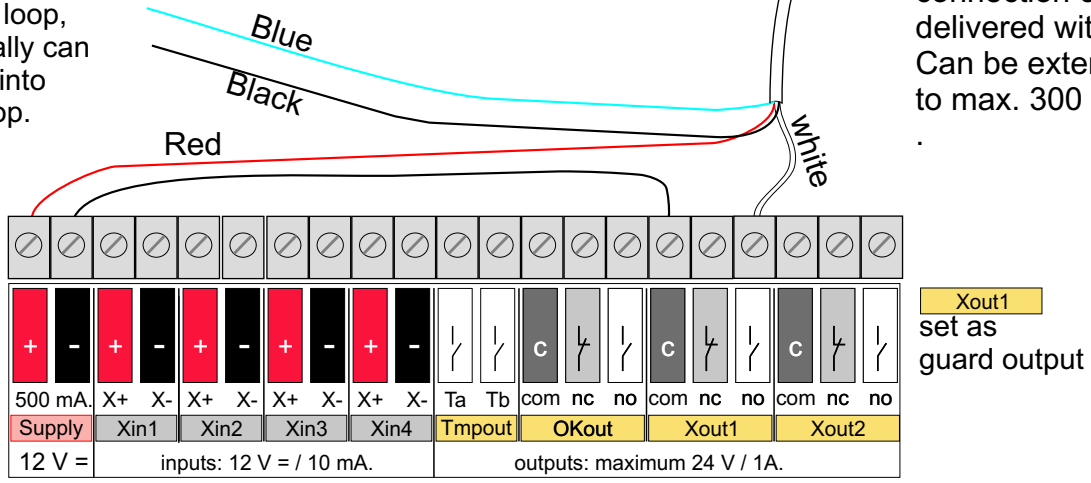
Function: as long as ***BANDIT*** is in guard mode, this Jumbo-LED will blink (~ 1 Hz). A maximum of three Jumbo-LED(s) can be connected on [Grdout] .




Example of application whereby the jumbo-led is switched with 0 V.

Blue and black wire form a closed loop, which eventually can be integrated into the tamper loop.

40 Ft. connection cable delivered within. Can be extended to max. 300 Ft. .


Blue
Black
Red
white
+ - + - + - + - + - Ta Tb c nc no c nc no c nc no
500 mA. X+ X- X+ X- X+ X- X+ X-
Supply Xin1 Xin2 Xin3 Xin4 Tmpout OKout Xout1 Xout2
12 V = inputs: 12 V = / 10 mA. outputs: maximum 24 V / 1A.
Xout1 set as guard output

## Alarm:

The output is active (COM and NO closed) from the moment ***BANDIT*** is switched into "alarm mode". The switching of this output into rest status is determined by the clicking on one of the radio buttons (option):

- ⊙ switches off when guard mode is switched off: if the unit is switched into guard mode off.
- ⊙ switches off if auto-reset time is elapsed: when the auto-reset time has elapsed.

options output: [XOut2] function: alarm
switches off when guard switches off
switches off when autoreset time is passed or when guard switches off
switches off when alarm output delay is passed or when guard switches off
alarm-output delay
01m00s
OK
Cancel

- ⊙ switches off after alarm output delay: as soon as the time on the adjustable timer for the "alarm output delay" has elapsed or guard mode is switched off.

## ☑ Doorbell:

If there is selected a doorbell input, it will be possible to select also a doorbell output.
As long as the unit is not in guard mode, this output will follow the status of the doorbell input.
As long as the unit is in guard mode, this output is in rest (COM and NO open).

☞ This output is used to extend the doorbell audio signal to e.g. a workshop in the back (local bell). Attention: max. 1 Amp with max. 24 VDC, this means you'll have to use a relay in between to control the local bell (this one will have almost always a higher voltage and/or power consumption).

## ☑ Panic:

The output is active (COM and NO closed) the moment ***BANDIT*** is switched into "panic mode". The output will switch into rest as soon as the "panic mode" is interrupted.

## ☑ Silent panic:

The output is active (COM and NO closed) the moment ***BANDIT*** is switched into "silent panic mode". The output will switch into rest as soon the "silent panic mode" is interrupted.

## ☑ Warning:

If there is selected a warning input (see page 15), it will be possible to select also a warning output.
The output follows always the status of the warning mode.

☞ This output is used to extend the warning audio signal to a nearby premises (e.g. a concierge room or video-recording activation).
Attention: max. 1 Amp. with max. 24 VDC, this means you'll have to use a relay in between to control the local warning signal (this one will have almost always a higher voltage and/or a higher power consumption).

## ☑ Fire mode:

This output is active (COM and NO closed) as long as the unit is switched into fire mode.

## ☑ External alarm:

This output is active (COM and NO closed) as long as the external alarm input is activated.
See p. 20, External-alarm input.

## ☑ Internal siren:

This output is active (COM and NO closed) as long as the internal siren sounds in conjuction with a clicked on audio message.
- BS-software - Adjustments - Edit - Outputs - - Internal siren.

Examples:
- "Guard on beep" is clicked on ☑ and "Guard off beep" is not clicked on. The output will be active as long as the "guard on beep" lasts, but will be in rest when the "guard off beep" sounds.

- Only "Doorbell sound" is clicked on. This output can only be activated (COM and NO closed) when the door bell sound is transmitted through the unit, p.e. to activate a bell in a backstore. Mind the maximum 1 Amp. Ohmic charge of the contact + sparkplugs. A normal bell forms an inductive charge and mostly a relay in between is advised.

## ☑ Power failure:

This output is active (COM and NO closed) as long as one or both possible supply failures (mains voltage and/or battery) are detected.
To give the installer the opportunity to make a differentiation, a click on selection menu is displayed:
- BS-software - Adjustments - Edit - Outputs - - Power failure.

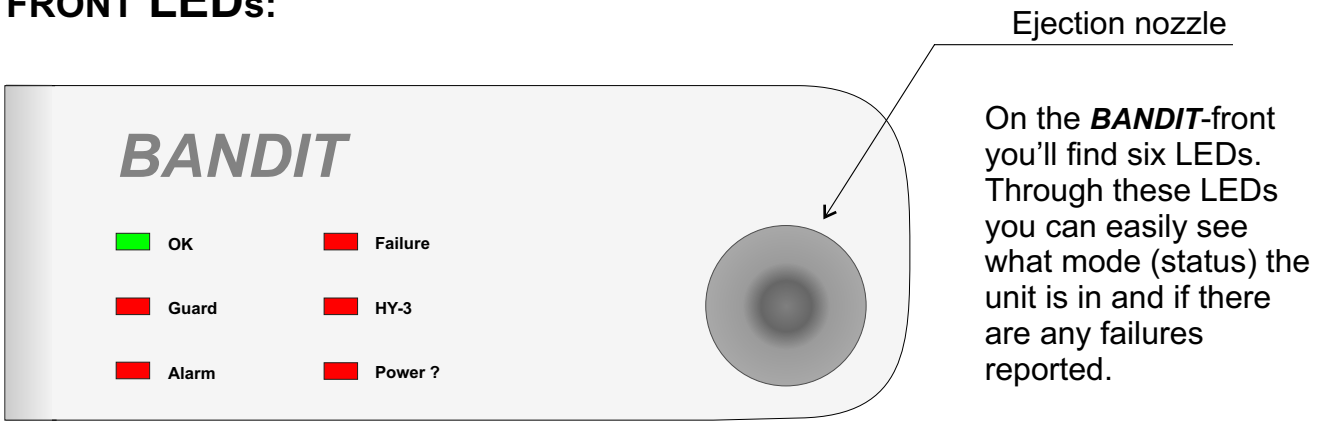
For the installer, the seperate specification of a possible power supply failure is a very important function.
The solution for this eventual power supply failure is often the responsibility of the enduser, while a battery problem is the responsibility of the installer.

It is completely understandable that some installers wish to have this kind of info before they intervene.

# COMMUNICATION STATUS

The unit gives following visual and audio information to its immediate surroundings:

## FRONT LEDs:




On the ***BANDIT***-front you'll find six LEDs. Through these LEDs you can easily see what mode (status) the unit is in and if there are any failures reported.

---

### Available (OK)

- If ***BANDIT*** is not in guard mode:
  - This green LED is lit when:
    a) there is no internal failure detected
    b) the unit is on its required temperature (temperature high enough to be operational, and to perform a fog ejection).
    Practically, this means: as long as the green LED is on, the unit is ready.
  - This green LED blinks if:
    a) no internal failure is detected, **and**
    b) the unit is warming up. As soon as it gets its required temperature, it will be ready to perform a fog ejection. If the mains power supply is present, the unit needs approximately 50 minutes (from cold condition) to reach its target temperature.

- If ***BANDIT*** is in guard mode:
  This green LED will be on. This way the unit will never reveal through its front panel the possibility of not being ready.

☞ One of the tasks of the integrated "Power Saver" is to take care that the temperature of the heat exchanger will not raise higher than necessary to produce the adjusted fog quantity. The temperature of the heat exchanger for a fog ejection adjustment of for example 5 seconds, is 50°F lower than for an adjusted fog ejection of 15 seconds. So if you change the fog ejection volume, automatically you'll also change the temperature of the heat exchanger. If there is enough difference between the 'old and lower' ejection period and the 'new and longer' one, the green LED will start blinking to show that the unit has not reached its new higher temperature yet.

## Guard

- This red LED is on as long as ***BANDIT*** is in guard mode
- As long as any adjusted outgoing delay is running, this LED will be blinking.

---

## Alarm

- This red LED goes on from the moment ***BANDIT*** switches into alarm mode, until the unit is switched to 'guard mode off' through the guard input or remote guard button.
- This red LED starts blinking from the moment ***BANDIT*** switches into panic mode, until the unit is switched to 'panic mode off' through the adjusted panic input.

---

## Internal failure

- This red LED blinks (~ 1 Hz) as long as ***BANDIT*** detects one or more internal failures.
  The unit practically checks continuously on possible internal failures.
  Check list of possible internal failures:
  - the glass fuse F2 (500 mA) which secures [Supply1] 12 V power supply is interrupted
  - the glass fuse F3 (6.3 AT) which functions as battery fuse is interrupted, no or very low battery is connected.
  - the internal overtemperature fuse (not replaceable) or the heating element is interrupted. If the main power supply is present and the MCU instructs the power electronics to heat up the heat exchanger, and after a few times of trying, there isn't a measured increase of temperature, the unit will assume the overtemperature fuse or the heating cartridge is interrupted (back to factory).
  - the internal 12 V charging voltage (normally 13.1 - 13.2 V) is too low.
  - If the main power supply is present, ***BANDIT*** will perform a battery condition test each time the guard or back cover, side hatch cover tamper contact its status changes.
  - The temperature in the ***BANDIT*** housing is higher than +50°C / 120°F.
  - The MCU gets the report of one or more internal temperature sensors measuring unrealistic values or value jumps.

- This red LED blinks fast (~ 5 Hz) as long as:
  - Fog ejection is disabled by the BS software or 'Red jump" on the PCB isn't inserted.
  - A switch on an eventual connected "Control Box" is on: or .
  - An illegal HY-3 pack is inserted (for example: demo type in a regular ***BANDIT*** device).
  - A forced software setting is valid, like for example:
    - the fog generator is disconnected (software "red jump")
    - one or more programmable outputs [Xout1,2 3] is not "auto" set.
  - Incomplete or damaged adjustments are loaded from the programming computer. This is only possible in case of following errors:
    - a bad electrical (Communication Link plug) contact during the programming.
    - a forced reset of the MCU during the programming.

  The meaning of this fast blinking is to warn the installer and/or end user an abnormal situation exists.

- If ***BANDIT*** is in guard mode, this LED will never blink. This way ***BANDIT*** will never show through its front panel, to its surroundings, there might be an internal failure.

## **HY-3 pack** (*HY-3 pack* liquid reserve)

With a new or refilled HY-3 pack on board, ***BANDIT*** disposes of 1.4 litre HY-3 liquid.
During a fog expulsion, approximately 28 ml of fluid is consumed each second. So basically, there is a total of ~55 seconds of fog expulsion available.
At ~70% of consumption of the HY-3 liquid, the unit will show through this LED the HY-3 pack needs to be refilled.

Theoretically the HY-3 pack has no expiration date. But it is good practice and advised to replace (new or refill) the HY-3 pack every 4 years, this ensures maximum reliability.

If this red HY-3 LED blinks, the *HY-3 pack* has to be exchanged (refilled).

As long as ***BANDIT*** is in guard mode, this LED will be off. This way, the unit will never show through its front panel, to its surroundings, there might be a shortage on fog liquid.

---

## **No mains power supply** (Power ?)

This red LED blinks as long the main power supply to ***BANDIT ,*** or its main fuse F1 is interrupted **and** the unit is not in guard mode.

☞ If ***BANDIT*** gets no main power supply for more than 2 hours, the internal heat exchanger will cool down too much to function properly. ***BANDIT*** will notice this fact and will refuse to perform any fog expulsion. A fog expulsion attempt with a cold heat exchanger is wet and can cause damage to the surroundings (greasy layer on textile, documents, furniture, etc...). The moment the main power supply is available again, the unit will heat its heat exchanger to performing temperature and recharge its internal battery.

---

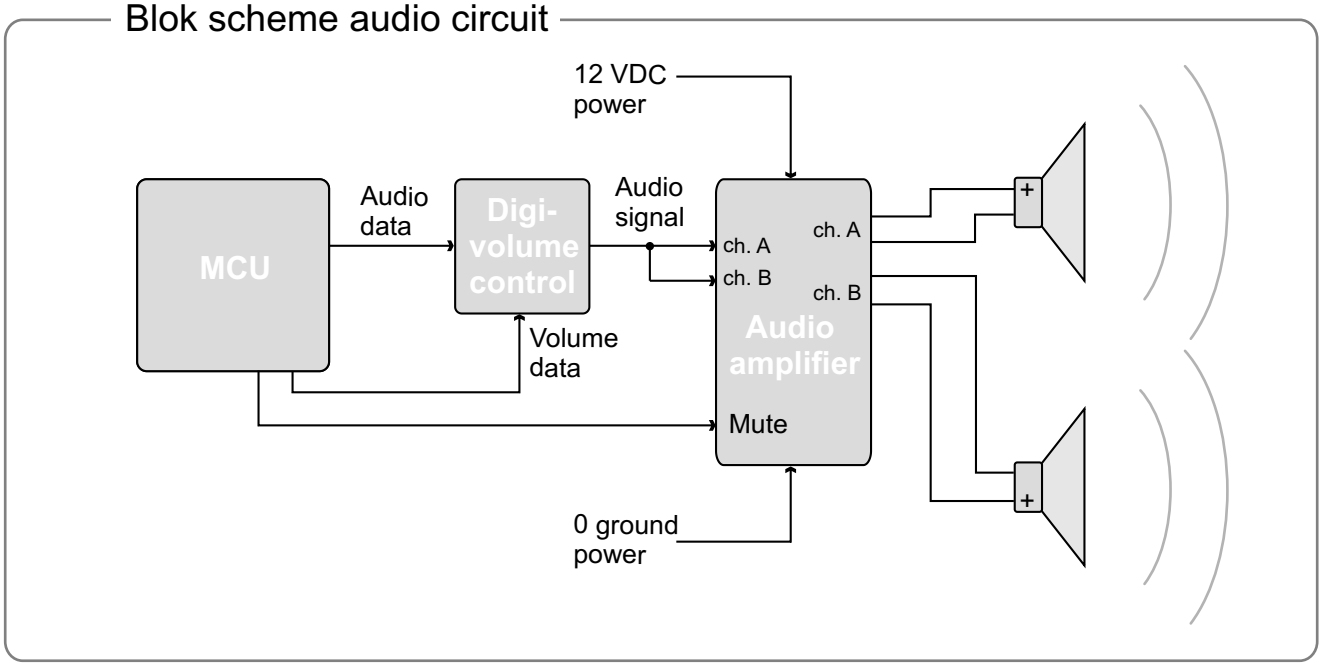
☞ If one chooses to have a hidden mounted application (/L option), the front LEDs often are not visible anymore. It is suggested to use and install a “Control Box” in this case.
For details of Control Box see p. 42

☞ Through the BS software there is also a setting possibility which automatically turns off the front LEDs, 4 minutes after the unit is put into guard mode.
- BS-software - Settings - Edit - Frontpanel.
The front LEDs will regain their normal functionality from the moment the unit is put into guard mode off.
Some installers prefer this setting. While set this way, the unit will not reveal its presence in the dark because the green OK- and the red “Guard” LED will be turned off.

# AUDIO

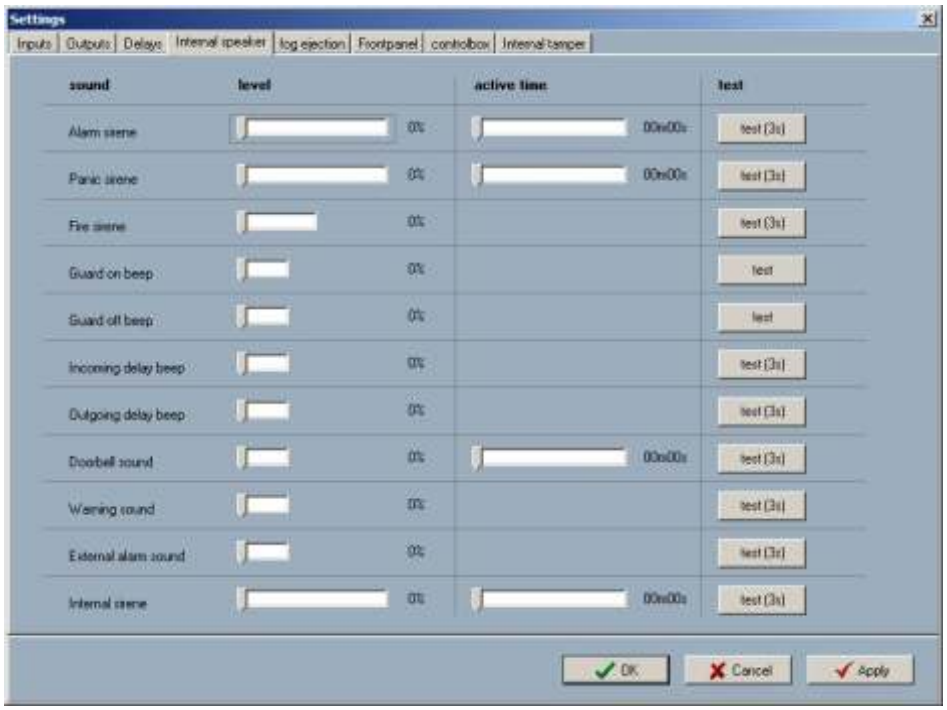
The unit 240PB has two build-in speakers. These are hidden behind the front panel and are extra mechanically protected with a perforated metal plate.

Blok scheme audio circuit

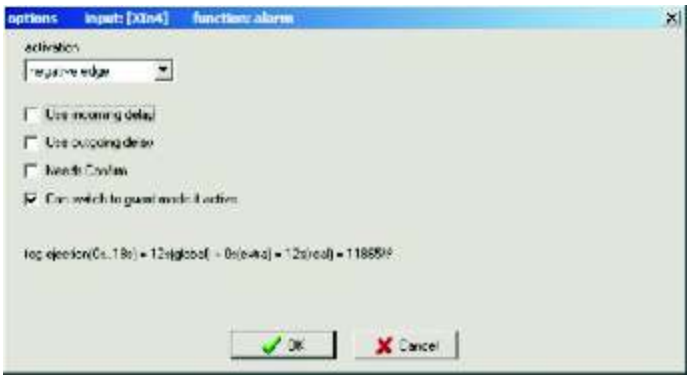



The available audio signals are compiled into the flash memory of the MCU. The preferred audio frequency is presented through a high-low filter and a digital potentiometer (volume controller) to the analogue 2 x 22 W audio amplifier.
This one controls the integrated speakers.

The meaning of the audio-part is to have the attention of the surroundings on some events.




An overview, the setting of the volume and sound test buttons of the different audio messages is shown on the screen:
- BS-software -
Settings -
Edit -
Internal speakers.




When a unit is put into guard mode (directly or throug a controlling alarm system) and the unit sounds its siren (instead of the normal one beep) it means that the unit is refusing to switch into the requested guard mode.
Usually this means that the moment the unit is put into guard mode, one or more alarm inputs were already activated. This could result immediately into an unwanted fog ejection. This refusing behaviour is a standard factory setting. Through PC/laptop this setting can be changed to ‘status alarm input has no influence on switching to guard mode’.

# EVENT-LOG

The device 240PB is equipped with a complete log book. This resides within the electronic components on the PCB: Serial Eeprom 64 Kb, independent supplied “Real time clock” and the internal flash memory of the MCU.
Each relevant event is written in the log including date and time. The log works like a big paper roll of approx. 1000 lines. Each event represents 1 line of text. The oldest event is overwritten by the newest event. The newest event has the highest line number.

Reading out the log book takes place via the de BS-software; log-in and click on the menu event-log. After entering the operator name the log book file shall automatically be transmitted via the “Communication Link” to the connected PC/laptop. This one saves the log book in PDF-format onto the hard disk in the directory: /pb240 / events.
The file name of the saved file is generated automatically, for example: 2004_09_15__00_11_27.pdf. This name exists out of the date, time plus eventual device alias (time is based on the PC/laptop clock).

## The time:

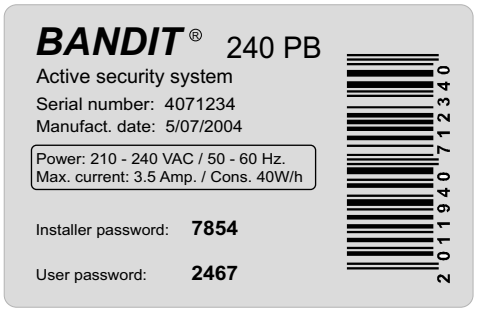
In order to have a good log, the correctness of the time source is highly important. The internal device clock on the PCB is very reliable, but you can expect an error margin of about one to two minutes a year. So it is very important that during the yearly maintenance, you check the device time and eventually slightly adjust the clock.
- BS-software - Bandit - Time ...
The time screen shows a standard Windows clock screen, wherein the actual device time is shown and can be adjusted.

☞ The internal device “Real Time clock” works always by the GMT-time. But however the BS-software converts this GMT time automatically to the time zone your PC/laptop is working in.
So the time is presented on your PC/laptop in your local time including summertime and leap year modification.

# PASSWORDS

In order to get access via a “Communication Link” to a ***BANDIT*** fog generator it is necessary to enter first the two required passwords.
The required Installer as well as the User password are mentioned on the inner device label.

As soon the BS software is started the Log-in button appears. By clicking on this button, the small “Log-on” pop-up screen shows.


BANDIT® 240 PB
Active security system
Serial number: 4071234
Manufact. date: 5/07/2004
Power: 210 - 240 VAC / 50 - 60 Hz.
Max. current: 3.5 Amp. / Cons. 40W/h
Installer password: 7854
User password: 2467
2011940712340

Inner device label location:
- Unscrew both M4 screws of the HY-3 pack hatch and open the hatch.
- The label is stuck on the shiny backplate of the HY-3 pack compartment (remove the HY-3 pack to have a better view).

As soon as first the Installer password followed by the User password are entered, there is full access to all menus.
In order to change both factory default passwords go to the “change password” menu:
- ⌨ BS-software - 🖱 Bandit - 🖱 Change password - 🖱 installer password.

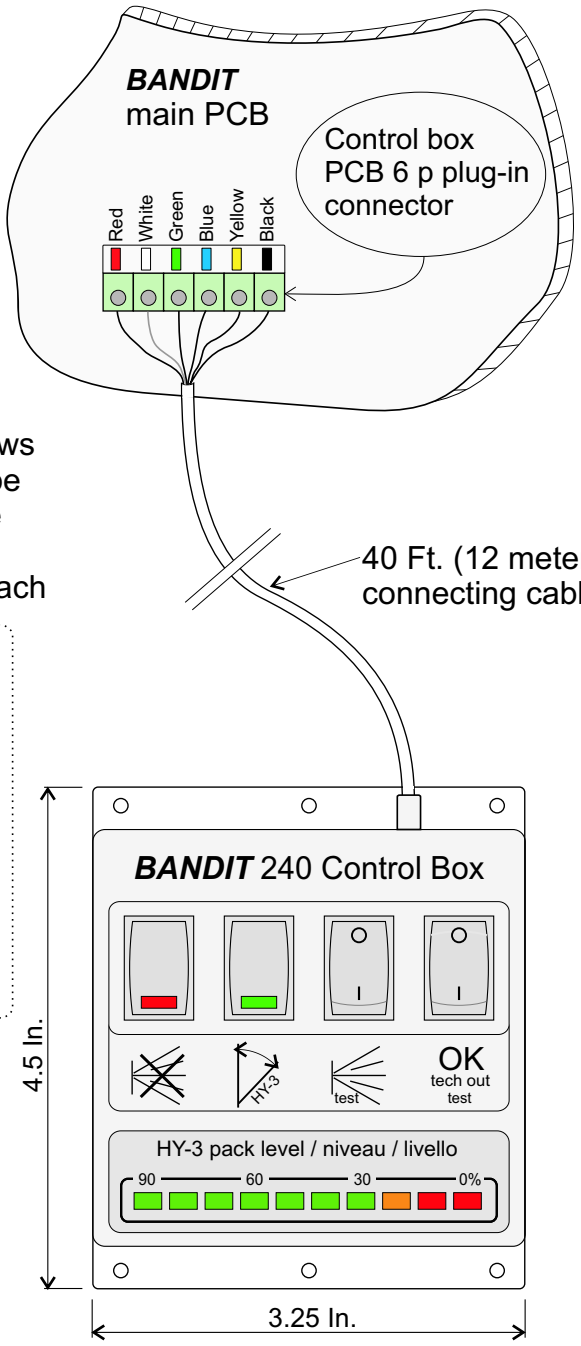
By entering first the actual valid old password the software will request the new password.
The BS software controls in real-time the validity of the entered password (minimum 3 and maximum 6 figures).
By entering a new password, the old password gets automatically erased and overwritten by the new password.
Both passwords are located in a hidden coded and inaccessible Eeprom address of the device MCU.

☞ For full security: - use only unique passwords for each device. So don’t give all installed devices the same set of passwords.
- never write the passwords on a piece of paper that could be found in the inner device housing.

☞ In the unlikely event that the passwords are lost: Call Bandit UK Ltd. and explain your situation (also inform the full serial number of the particular device). Maximum 3 working day’s and after a security control, Bandit UK Ltd. will present the installer and/or user a new set of one-time spare passwords.
Bandit UK Ltd. has the full right to refuse to present spare passwords as long the security control of the applying party is not 100% satisfying for Bandit UK Ltd. and/or his legal direct representatives.

# Control Box

The "Control Box" is the most used and requested option which comes with the ***BANDIT*** 240PB. It permits the installer to easily perform unit tests during the annual inspection and easily open the side hatch in order to change the HY-3 pack



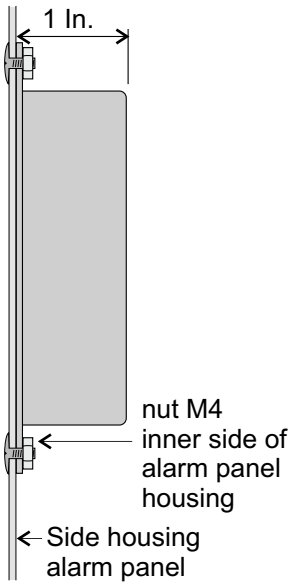

**Installation:**
The box has to be installed in an access secured housing. Normally the "Control Box" is installed in the housing of an existing alarm panel. The required screws and nuts are delivered with the box. The box cannot be opened, the inner electronics and connecting wire are sealed within. The sealed in connecting wire has a standard length of 40 Ft. If it should be too short to reach the ***BANDIT*** , it can be extended maximum 300 Ft. using a standard 6 wire alarm cable.
Normally connect color to color (best separately soldered) and insulated and finished with a general insulation over the complete wire. In the packing of the “Control Box” you’ll find the mounting screws and nuts, also a 6 way plug-in connector with screw connection.
First insert the connecting wire through the input swivel of the unit. Then strip the strands and connect to colours identified on the plug.
Slide the male plug on to the 6 way female connector on the PCB (see p 9, PCB lay-out to locate control plug-in connector). Mark the box “Control Box used” in the screen:
BS-software - Settings - Control box).
The cable is supplied with a tamper wire secured through the unit.

If explicitly requested while ordering, the "Control Box" can be delivered with requested length of the connecting wire (max 300 Ft.) and wire colour (white or brown). Each extra meter wire is charged with 1€ + VAT.

**Consider well while installing that the person who has access to the "Control Box", also is in control of the functioning of the *BANDIT* fog generator.**

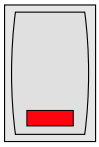
If it is not possible to mount the "Control Box" within the inner housing of an existing alarm installation, you’ll have to install the "Control Box" in a key and tamper secured metal box, in a location which can’t be reached without being detected from at least one burglary detector.

For exact functions of the different switches and LED-bar, see next page.



**Operation and function:**

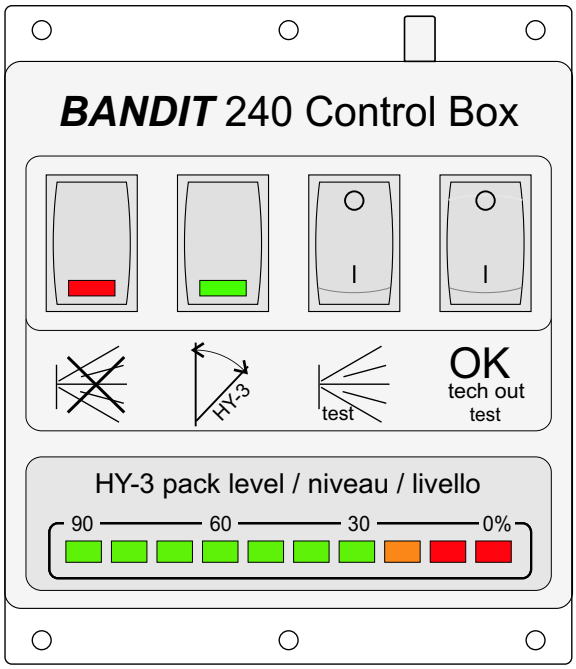
- Bistable switch:



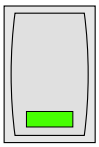
With this switch the fog generator is disconnected (so no fog ejection) Same function as “Red Jump” on PCB.
With active switch:

- The internal electronics continue to function as normal, but ***BANDIT*** will always refuse to perform a fog ejection.
- The front LED "internal failure" blinks fast (~2Hz).
- The red LED on the switch is on.

This switch permits you to put the controlling alarm system into an alarm simulation, whereby the ***BANDIT*** is also triggered, but without filling the room with fog.



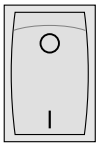

- Bistable switch:



If the side hatch (in order to replace the HY-3 pack) is being opened, the unit will interrupt the internal sabotage loop. If this opening is done while the unit is in guard, the unit is going to perform a fog ejection. With this switch, you can prevent this sabotage reaction
With active switch:

- The tamper output stays closed, so no sabotage notice or fog expulsion while opening the side hatch.
- The green LED on the switch is on.
- The front LED "internal failure" blinks fast (~2Hz).

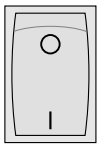
- Monostable switch (pulse switch)



This allows a fog ejection test, each time this switch is pushed in, ***BANDIT*** will perform a fog ejection for one second.

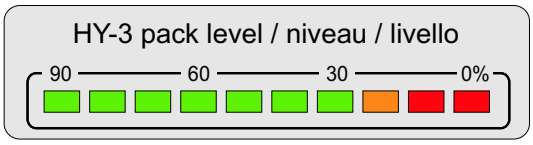
If the volume of the ejected fog during this one second is enough and normal, you can be sure that it also will be OK for longer adjusted fog ejection periods. Before performing a fog ejection test, see safety precautions on page 3.

- Monostable switch (pulse switch)



As long as this switch is pushed in, the technical output [OKout] will be in rest (COM and NO open), so an internal failure Will be simulated. This way an internal failure signal by ***BANDIT*** can be checked if it is treated and transmitted correctly.

- HY-3 pack level LEDbar (dot mode)

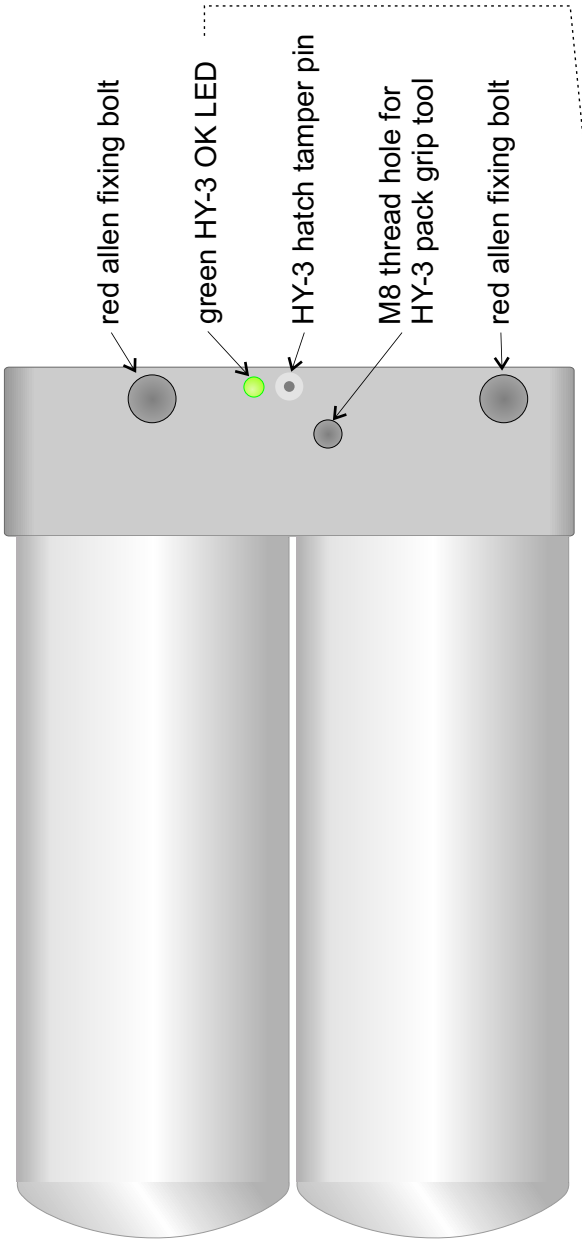



This "LED bar" gives the actual usable percentage of volume of HY-3 liquid in the HY-3 pack.
As soon as the orange LED is lit, you’ll have to replace the HY-3 pack. The unit also will have its red HY-3 LED on the front panel blinking.
If there is less than 30% of HY-3 liquid in reserve (30% = ~15 sec. of fog ejection time available), you’ll have to replace the HY-3 pack with a filled one.

# REPLACEMENT OF *HY-3 PACK*

Mechanically, the inside of ***BANDIT*** consists out of 2 main components:
-The heat exchanger: this chrome-steel cilinder is filled with hot gassifying channels, which take care of 'steaming-up' the injected *HY-3* fluid to become a dry fog..
- The *HY-3 pack* with following integrated components: double *HY-3* fluid reservoir, NC valve, fluid filter, over pressure brake plate and electronics for memory data, temperature measurement, expulsion registration and communication. The inside of the *HY-3 pack* is constantly pressurised to ~ 220 PSI (1500 kPa).

A filled *HY-3 pack* has a capacity of 1.4 litre (0.37 gal.) *HY-3* fluid. With a fog ejection, there is approximately 28 ml of fluid consumption each second, which means approximately a total of ~55 seconds of fog expulsion available.
The MCU on the main PCB communicates continuously with the present *HY-3 pack* and calculates, by means of the passed through parameters, how much fluid still is available in the *HY-3 pack* .

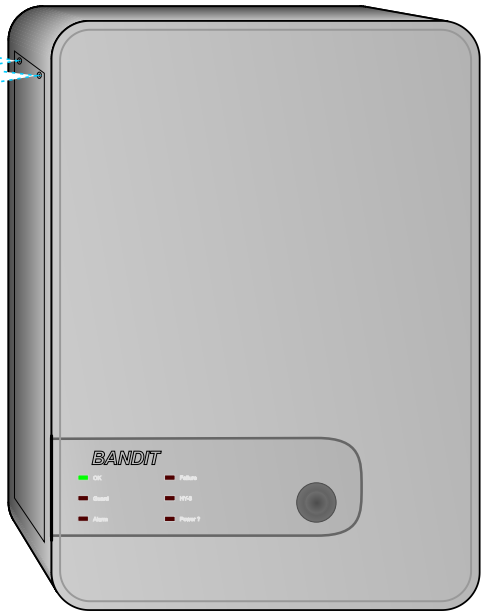



If the level seems to have gone below the adjusted minimum value (see page 22, *HY-3 pack* LED), the unit will request the replacement of the *HY-3 pack*. This is shown in different ways:
- *HY-3 pack* front LED blinks.
- The LED bar on the Control Box shows continuously the measured fluid level.
- If the unit has been asking for replacement of the HY-3 pack for more than 7 days, this abnormal situation will be seen as a technical failure and the [OKout] contacts will be put in rest for reporting this situation (COM and NO open).

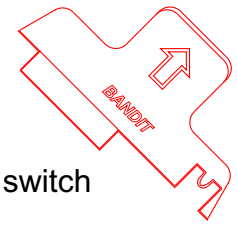
**Functions of green HY-3 OK LED:**

- Continuously on: everything OK
- Blinks: The *HY-3 pack* isn't accepted, because e.g..: demo HY-3 pack, an illegally filled or wrong type *HY-3* fluid (irritant or coloured fog) . The label has to mention RF (Regular Fog).
- Blinks fast (2 Hz): The *HY-3 pack* has to be replaced, because there isn't enough HY-3 fluid left (beneath adjusted minimum level).
- Stays off: there is a fatal communication problem. Check if the sub-D connector is clean, try another *HY-3 pack* or the unit has to return to the factory.

**Procedure to change the *HY-3 pack*:**




- First of all, the tamper contact of the side hatch must be disabled. This through:
  - "Control Box" switch , or
  - by hardwire bridging the tamper loop, or
  - by software trough the PC/laptop (☑ HY-3 pack menu).
- Unscrew by means of the "HY-3 pack grip" the side HY-3 pack hatch by loosening the 2 allen bolts.
- Remove the side hatch and put it gently (to avoid scratches) on the unit.
- Open the box of the new *HY-3 pack* and put the upper layer next to the box.
- Use the "HY-3 pack grip" allen key #5. Unscrew the 2 red allen-fixing bolts. Put these also on the unit.
- Screw on the M8 thread end of the "HY-3 pack grip" in the M8 hole and pull the "HY-3 pack grip", the whole *HY-3 pack* will slide over the 2 slide pins out of the unit.
- Put the "old *HY-3 pack*" in the upper layer of the *HY-3 pack* box. Unscrew the "HY-3 pack grip" and screw it on the new *HY-3 pack*. Pull off the red transport protection cap and put it on the "old" HY-3 pack.
- Push evenly the *HY-3 pack* over the slide pins into the unit. Press slightly on to make sure the HY-3 pack connector and the liquid coupling are sliding over their respective connector and coupling.

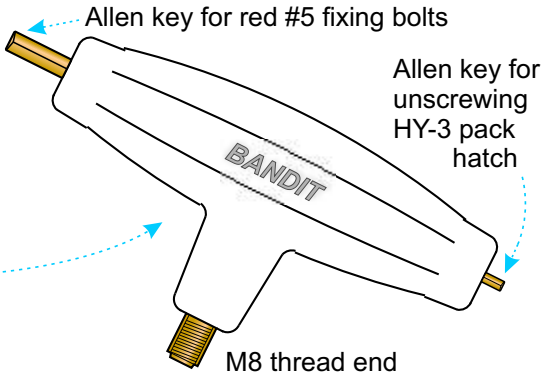



- Unscrew the HY-3 pack grip and fasten both red allen fixing bolts.
- The green HY-3 pack LED will be on continuously (everything OK).
- Remount the side hatch and fix it by fastening both allen bolts. Put the sabotage switch of the side hatch back off (green LED switch and front LED "failure" go off).
- Repack the "old" *HY-3 pack* in the original box (tape it).
- For refilling: ship the box by normal freight to your ***BANDIT***-dealer.

Normally the returned *HY-3 packs* get a technical check, are refilled, memory reset and tested. Additional costs will be incurred if the returned *HY-3 pack* shows deep scratches or dents. Repair cost will be assessed by the company. The costs to repair the *HY-3 pack* into a reasonable condition to sell, will be charged to your account.

Changing the *HY-3 pack*, takes about 5 minutes. You will need a new *HY-3 pack* and the *HY-3 pack grip*, and possibly a ladder to reach a higher installed unit.

With each ***BANDIT*** comes a *"HY-3 pack grip".*



# MAINTENANCE

Because ***BANDIT*** is listed as a security device, it is obligatory to regularly perform a function check.

Every year:

- Fog expulsion check and failure report check through[OKout].
- Using the “Control Box” you can easily perform these tests . The LED bar indicates the quantity of HY-3 fluid present in the HY-3 pack.
- If the "Control Box" isn’t connected, all tests can be performed through PC/laptop.

☞ If a fog ejection test is performed, you’ll have to warn all persons in the immediate surroundings and the responsible person for fire hazard. Make sure no one is looking at the direction of the ejection mouth. Also read next page First Aid.

- Vacuum the textile of the ***BANDIT*** front. The textile also has a function as an air filter for internal air circulation. After a while dust can be an obstacle for a good internal air ventilation. In those rooms which contain a higher dust percentage, a more frequent textile cleaning is advised.

Every 2-years:

- Replace the internal battery in the unit (2Ah / 12V sealed lead/acid).

The ejected fog is completely harmless for human beings and warm-blooded animals (altrough it is harmful for flying insects), even when staying more than 10 minutes in a completely sealed area ( < 1 ml *HY-3* aerosol / 1 m³ or 35 Ft³ air).

The only problem to be considered arise from the power of the fog expulsion and possible panic reaction to this sudden event.

However, following persons should avoid staying in those spaces filled with fog:
- persons suffering from claustrophobia (panic instantly)
- persons who are over sensitive to stressing situations, e.g. hyperventilate, racing pulse, etc....
- persons who are strong asthmatic or exceptionally sensitive to irritation of the respiratory system.
- children beneath the age of 9 (possible traumatic experience)

Although harmless, experience tells us, dogs (even trained guard dogs) refuse to enter a room filled with fog.

If requested, your ***BANDIT***-dealer can always provide you with a copy of the *HY-3* MSDS (Material Safety Data Sheet) and/or the approval test of the Belgian Ministry of Health Affairs and/or the German TÜV report. You can always surf to our web site, www.bandit.be, select documents and load the needed files as printable PDF files.

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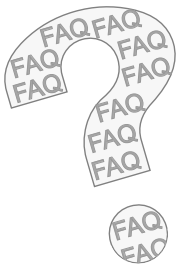



# FREQUENTLY ASKED QUESTIONS

**?** Is the fog harmful to our health or can it cause damage to computers, photo equipment, food, etc.?

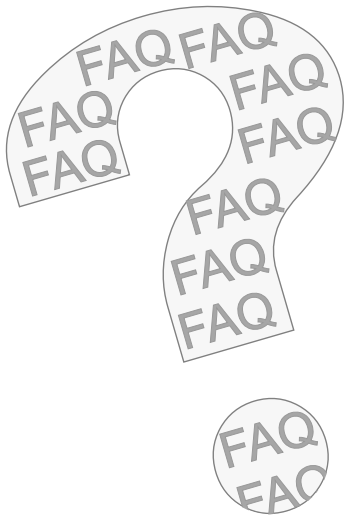
No, fog ejected by ***BANDIT*** is almost the same as used in the entertainment industry, only much thicker and faster produced. Only when too much fog is ejected into a limited space (overfilling), or the space has no ventilation (no air movement) so the fog stays steady for more than 20 minutes, a harmless thin condensation film may appear on certain surfaces (cold and smooth ones). If accidentally this does happen, this can be easily removed using a moist cloth (the condensation is water-soluble) without using any soap.
You can always get a copy of following documents from your ***BANDIT***-dealer:
- HY-3 safety data sheet (MSDS).
- HY-3 approval form from the Belgian Ministry of Health Affairs.
- German TÜV approval form for HY-3.

**?** Who is responsible if someone gets injured due to low visibility caused by a fog ejection?

Regarding this subject there is no precedent or legal experience defined, because up to now there have been no accidents with the ***BANDIT*** security system. In any case, the manufacturer has covered himself with an insurance for accidents caused by his product, regarding the third person liability, the burglar himself and/or the damage caused by public services (police, fire, etc...) Also look at our sales conditions (www.bandit.be)
Keep in mind that the manufacturer is not responsible for goods that are stolen even though ***BANDIT*** is functioning as supposed or if it is malfunctioning due to an internal or external failure. We advise the installer to inform his insurance company that they will be installing fog security systems. The insurance will accept that this falls under your normal professional coverage as an alarm installer. The insurance company can always request a copy of the ***BANDIT*** “no claim" certificate from the manufacturer’s insurance company.

**?** I have to install a ***BANDIT*** system and the local person responsible for security demands that the unit doesn’t eject fog in case of fire.

Install an approved heat sensitive fire sensor on the ceiling. This type of sensor will not react to ejected fog, but opens its alarm contact at the moment a rapid increase of temperature occurs.
Connect this fire sensor alarm contact to a programmable input and define this input as fog expulsion preventing fire sensor input. The procedure which is followed when activating this input depends on the possibility of the controlling alarm system.
Always, install the fire sensor where a possible burglar can’t reach without first being detected by the burglar alarm system.




Do I have to replace the *HY-3 pack* (liquid supply) each time the unit has performed a fog expulsion, including false alarms?

No, ***BANDIT*** consumes ~28 ml. of HY-3 fluid each second of fog expulsion. A fully charged reservoir contains ~1400 ml.of HY-3 fluid. The unit can perform ~ 50 seconds of fog expulsion. Depending on the adjusted fog expulsion period each alarm cycle leaves, a minimum of 3 (big spaces, 200 M² with normal ceiling height of 2,80 metre) to a maximum of 25 expulsion cycles in reserve. If the liquid level is beneath the adjusted minimum level, the unit will request to replace the *HY-3* pack. See page 22 for further explanation.

What does replacing of the *HY-3 pack* mean?.

The *HY3-pack* is an ingenious combination of different parts:
- A pressure vessel: 2 pressure resistant stainless steel tubes. These contain the *HY-3* liquid and the propellant under pressure, equal to the vapour pressure of the liquid pressure gas and the nitrogen after pressure filling. Both gasses are not inflammable, are ozone friendly and are not poisonous for humans or the environment.
- The electro valve: together with the liquid filter it forms an integral subpart of the HY-3 pack. If the valve is opened by the ***BANDIT***-electronics, the *HY-3* liquid goes through the *HY-3 pack* 's liquid link in the hot heat exchanger for heating up and drying.
- The electronics: built-in to the *HY-3 pack*. This little PCB contains a voltage regulator, temperature- and memory chip and a few components which take care of the communication with ***BANDIT*** main PCB. The purpose of these electronics is to "measure" how much fluid is present in the pressure vessel and to store all production and filling data of the *HY-3 pack*.

If the pressure vessel is empty, you'll have to replace it with a refilled one. The pressure vessel has to be returned for refilling. There, the still present fluid and propellant will be sucked out and recycled. The empty *HY-3 pack* will be automatically tested and refilled. The built-in memory chip will be updated and the "renewed" *HY-3 pack* is carefully re-packed to be sent to the customer.
This way, environment taxes and material costs are minimised. The high certainty of returning the empty *HY-3 packs* for refilling is secured through the high purchase price for a new *HY-3 pack*.

Does the *HY-3* fluid in the *HY-3* pack expire (decay) or does it loose its fog generating capacity after a certain period?

Contrary to those fog generators which hold their supply of fog fluid in a synthetic reservoir, the *HY-3* fluid in the *HY-3 pack* is kept in an oxygen free, pressure environment, Ph stabilised, de-ionised, clean filled and hermetically sealed off from the outside world. Degeneration in the *HY-3* pack is thereby eliminated.